

THE FAUNA OF BRITISH INDIA,

INCLUDING

CEYLON AND BURMA.

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COLEOPTERA.

CLAVICORNIA.

EROTYLIDÆ, LANGURIIDÆ, AND ENDOMYCHIDÆ.

BY

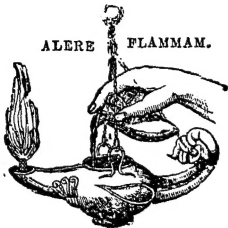
G. J. ARROW.

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ALERE FLAMMAM.



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EXPLANATION OF PLATE I.

ENDOMYCHIDÆ.

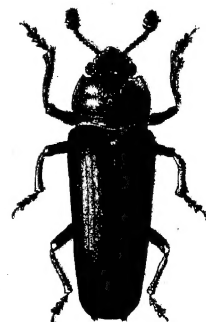
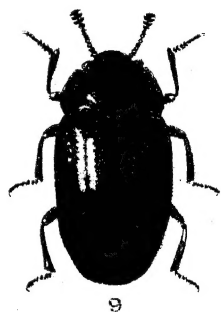
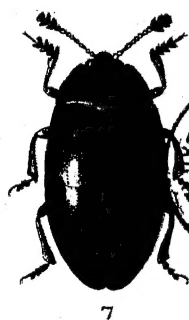
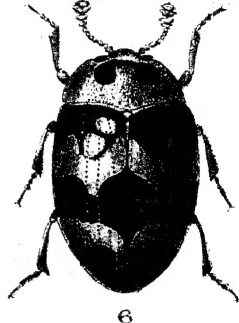
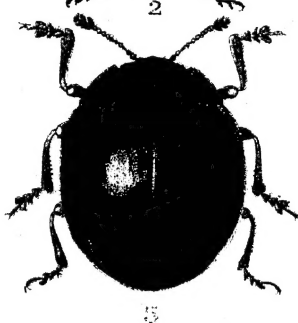
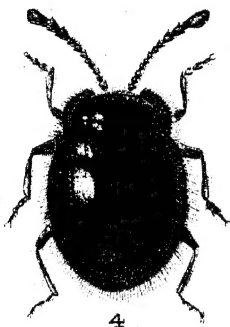
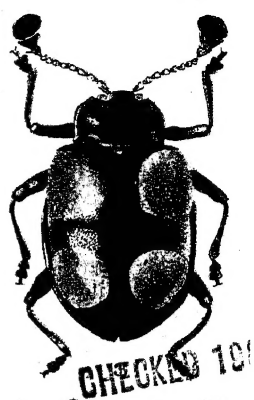
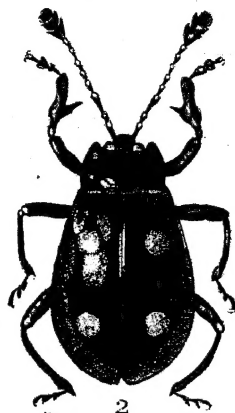
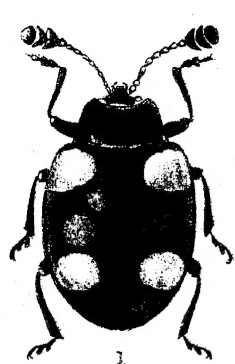
- Fig. 1. *Cymbachus spilatus*, sp. n., $\times 4\frac{1}{2}$; p. 281.
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AUTHOR'S PREFACE.



IN the preparation of this volume, the third contributed by me to the series, I have fortunately been able to ensure the accurate identification of a very large proportion of the species by examination of original type-specimens, and, as before, I have indicated by an asterisk, placed after the name of the author of the species, the cases in which a type or co-type has been examined. Many of the types are in the British Museum, including all those described by Gorham and Fowler from the collection of Mr. H. E. Andrewes, recently presented by him to the nation, as well as the *ENDOMYCHIDÆ* contained in the Gorham collection purchased by the Museum in 1891, which included the types of the species described by Gerstaecker from Deyrolle's collection. The types of Crotch are the property of the Cambridge University Museum, by which they have been kindly lent to me. To Dr. R. Gestro, of the Genoa Museum, I am very greatly indebted for the loan of the very important collection made in Burma by Leonardo Fea and named by Gorham. I must also express my gratitude to Dr. Walther Horn, of the Berlin Entomological Institute, for the loan of the types of Kraatz; to Dr. Kuntzen, of the Berlin State Museum, for several of those of Gerstaecker and Karsch in that Museum; to Monsieur G. Severin, of the Brussels Museum, for the types of Fowler contained there; and to Mr. Erno Csiki, of the Budapest Museum, for kindly sending me his type of *Aulacochilus decussatus*. Dr. Kai L. Henriksen, of the Copenhagen Museum, has given me very valuable help by examining for me the types of Wiedemann in that Museum,

and Dr. J. Obenberger, of the Prague Museum, by the loan of the ENDOMYCHIDÆ collected by Helfer in Tenasserim, has enabled me to add several species to the Indian list. Finally, I have to thank Monsieur R. Oberthür for allowing me to examine the ENDOMYCHIDÆ of Gorham's second collection, now in his possession, and for the loan of certain of Harold's types of LANGURIIDÆ also belonging to him.

The only considerable series of species the identity of which it has not been possible definitely to establish are those of Motschulsky, who described, for the most part in a very cursory manner, seven species of EROTYLIDÆ, presumably Indian, in 1858; three species, called by him *Tritomidea* but belonging to the genus *Euxestus*, in 1859; eight referred by him to the genus *Languria* in 1860, and three for which he made the genus *Cladoxena* in 1866. Motschulsky's collection was formerly in the Petrograd Museum but I am informed by Dr. Uvarov that it had been almost entirely destroyed by *Anthrenus* and only a very few remnants still existed at the time of the War. Specimens of a few of his species, probably sent to London by himself, exist in the British Museum and a few others are recognisable with some degree of certainty, but of most the particulars available are so vague that their identity can only be guessed at and his names must therefore be ignored.

A few words ought perhaps to be said here as to the unfortunate confusion of nomenclature which has resulted in the family ENDOMYCHIDÆ from the independent publication in France and Germany, in the year 1857, of works dealing with the same genera and species. The intended publication of Gerstaecker's important Monograph on the family seems to have become known in 1857, and an unfinished work begun many years before by Guérin-Méneville was hurriedly prepared for publication in the 'Archives Entomologiques,' where it appeared with the date 1st June, 1857. According to a statement by Guérin in the 'Revue et Magasin de Zoologie' for December of the same year, the actual date of publication was 10th November, 1857. The paper of

December, which claims to be the continuation of the earlier one, contains a tabular statement, in which are briefly characterised a number of new generic names. Gerstaecker, who had the assistance of Henri Deyrolle of Paris, appears to have learnt of the intention to forestall him by the issue of this now unnecessary document, and, in order to secure priority for the names employed in his Monograph, already in the press, he published in the 'Archiv für Naturgeschichte' of the same year short diagnoses of the genera and species affected, extracted from his manuscript. These appeared in the first of the two volumes of the 'Archiv' for the year 1857 and therefore presumably antedated the two French papers. In his Monograph, which appeared in the following year, he treated Guérin's names as synonyms of his own, and the justice of this has not been disputed. The extraordinary treatment of his contributor's manuscript by James Thomson, the Editor of the 'Archives Entomologiques' (who, in spite of his name, did not claim British nationality), detailed at great length by Guérin in his second paper, has happily not introduced the difficulties which might have resulted.

Amongst the many who have given valuable help by collecting specimens in India, Mr. Herbert Stevens and Mr. H. G. Champion must be specially mentioned. I am also indebted to the various institutions in India which have supplied me with material for examination. Specimens have been forwarded by the Agricultural Research Institute at Pusa, through Mr. T. Bainbrigge Fletcher, Imperial Entomologist; from the Indian Museum, Calcutta, through the late Director of the Zoological Survey of India, Dr. N. Annandale, and Dr. Stanley Kemp; from the Forestry Research Institute at Dehra Dun, through Dr. C. F. C. Beeson and Dr. Malcolm Cameron; from the Agricultural College, Coimbatore, through Mr. Ramachandra Rao; from the Colombo Museum, through Mr. G. M. Henry; and from the Central Museum, Chota Nagpur, through Mr. E. A. d'Abreu. To all these I desire to record my thanks.

The illustrations to the volume are the work of Mr. B. Jobling and Miss Olive F. Tassart, and to both of these, and especially to the latter, who has borne the lion's share of the work, I owe my thanks for the extreme care and patience which have never failed. Without these qualities their great skill would not alone have achieved the high degree of accuracy which will ensure for their work a considerable part of whatever value the book is found to possess.

I must also express my obligation to Dr. Hugh Scott, without whose admirable editorial exactitude various errors and discrepancies would probably have escaped detection.

In conclusion I must again acknowledge the assistance rendered by my wife.

GILBERT J. ARROW.

February, 1925.

EDITORIAL NOTE.

THIS volume of the 'Fauna of British India' exhibits two features not present in former volumes.

The first is a folding map of India and Ceylon, placed at the end of the volume, which it is intended to supply with each forthcoming volume of the series. The desire for such a map has been recently expressed in several quarters, both in India and in England. The last suggestion ever received from the late Dr. Annandale on the subject of the 'Fauna' concerned this matter, and was contained in a letter written by him on 18th March, 1924, shortly before his death, and not received till after that event. The map itself has been prepared by Messrs. Bartholomew and Son, and is a modification of that used in the India Office List. A number of names has been added, especially those of certain hill-ranges and districts often referred to in the locality-lists. These additions were made at the suggestion of the authors engaged at the time in writing volumes of the 'Fauna,' and of the editors themselves. It is, however, impossible to show all the localities mentioned in the text of these volumes in a single map. For many of them recourse must be had to detailed maps of parts of the country such as are given in 'The Imperial Gazetteer of India,' while a considerable number cannot be traced even in that work. In this connexion it may be added that the editors have made every attempt to standardise the spelling of place-names, and to follow the 'Imperial Gazetteer' whenever it includes these names. In other cases it has only been possible to give the names as recorded on the labels attached to the specimens, or in the literature cited; and no doubt some of the names so given will not correspond with the standards of orthography used in the 'Imperial Gazetteer.' This last remark applies especially to the names of places in Burma where specimens

were obtained by the Italian collector Leonardo Fea, and which are transliterated in a different manner.

The second innovation is the provision of a short Index of Plants mentioned in the volume, after the main index of insect-names. In some cases the finding of particular species of the insects under review on specified plants may be a purely chance occurrence, but in other cases it is more than this. The interrelations of insects and plants are so important that all records are of value, and the indexing of them under the names of the plants may, therefore, prove useful.

Finally, the editors wish to associate themselves with the author in thanking all those persons and institutions, both in India and Ceylon and in Europe, who have assisted by supplying types and other material for examination. Details of the help thus received will be found in the Author's Preface. It is a pleasure also to thank the artists and illustrators employed for the great care devoted by them to the making and reproduction, respectively, of the drawings. The artists are named by the author in his Preface; the plate has been lithographed by Messrs. Huth and the text-blocks executed by Messrs. Vaus and Crampton.

A. E. SHIPLEY,
HUGH SCOTT.

February, 1925.

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148. <i>oblonga</i> (<i>Fowl.</i>)	189	201. <i>ceylonicus</i> , <i>Fowl.</i>	229
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151. <i>ustulata</i> , <i>Arrow</i>	191	204. <i>pulchellus</i> , <i>Arrow</i>	232
152. <i>walkeri</i> (<i>Fowl.</i>)	192	205. <i>laticornis</i> , <i>Arrow</i>	232
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164. <i>mouloti</i> (<i>Crotch</i>)	202	216. <i>birmanica</i> (<i>Har.</i>)	241
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ERRATA.

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84. Legend of Fig. 18: for "*indieus*" read "*indicus*."
174. Line 19 from bottom: for "*(J. H. Sherwill)*" read "*(J. L. Sherwill)*."
222. After the heading "**Anadastus distinctus**" add "nom. nov."

GENERAL INTRODUCTION.

THE three families which are grouped together in this volume, although usually associated closely, have each well-marked characteristics, and are little liable to be confused one with the other. The relation between the *EROTYLIDÆ* and *ENDOMYCHIDÆ*

is partly that of occurrence in a similar environment (nearly all being fungivorous) and having a similar prevailing coloration, due in part to mutual resemblance for the sake of protection. They are very easily distinguished by the fact that the *EROTYLIDÆ* have five, and the *ENDOMYCHIDÆ* four, visible joints to the tarsi. In addition, while the cavities in which the front coxæ revolve are open behind in the latter family (see fig. 1, c), they are closed in the former (fig. 1, a). Another important distinctive feature of the *ENDOMYCHIDÆ* is the pair of foveæ at the base of the pronotum, which are absent in the *EROTYLIDÆ*.

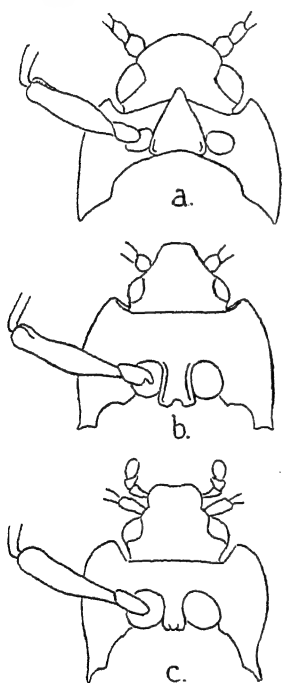


Fig. 1.—Lower surface of head and prothorax in: a, *EROTYLIDÆ*; b, *LANGURIIDÆ*; c, *ENDOMYCHIDÆ*.

The *LANGURIIDÆ* are not fungus-frequenting insects, like the members of the other two families, but feed, at least in the larval state, upon the stems of a variety of plants, within which they live concealed. Their very characteristic elongation of shape is thus due to the narrow quarters to which the body has to adapt itself until after the assumption of its final form. While possessing the five-jointed tarsi of the *EROTYLIDÆ*, the front coxal cavities (fig. 1, b) are open, as

in the *ENDOMYCHIDÆ*, and the *LANGURIIDÆ* also exhibit, with few exceptions, thoracic foveæ as in the latter family. The *ENDOMYCHIDÆ* have a rather close affinity with the *COCCINELLIDÆ*, with which some of the numerous small and round-bodied species are very liable to be confused: but the members of the latter

family are always distinguished by the exiguity of their antennæ, which organs, in the *ENDOMYCHIDÆ*, are always very well developed. The nearest affinity of the *EROTYLIDÆ* and *LANGURIIDÆ* is with the *CRYPTOPHAGIDÆ*, a large group of very small and generally hairy insects in which the tarsi are also five-jointed, but with a reduction to four joints in the hind feet of many of the males and without the dilatation of the three basal joints generally occurring in our families. The front coxal cavities of the *CRYPTOPHAGIDÆ* are open, as in the *LANGURIIDÆ*, so that there is a nearer relationship with these than with the *EROTYLIDÆ*. The broad tarsi, thoracic foveæ, and the usual occurrence of stridulatory files upon the vertex of the head, may be relied upon to distinguish the *LANGURIIDÆ* in critical cases.

The venation of the wings affords another means of easily distinguishing the three families. These organs, which are absent in a few cases amongst the *EROTYLIDÆ* and *LANGURIIDÆ*, but in no known instance in the *ENDOMYCHIDÆ*, exhibit the recurrent median vein which is characteristic of the wings of the largest section of the Coleoptera, the Cantharoidea. In the *EROTYLIDÆ* and *LANGURIIDÆ* this conspicuous vein extends almost throughout the length of the wing, and only a small part of the membrane lying beyond it is folded back in the position of repose. In the *ENDOMYCHIDÆ* the transverse fold is in the middle of the wing, and the veins are almost confined to the basal half; the median vein, instead of running towards the tip, is deflected towards the hind margin, and the outer half of the wing is almost clear. This is the condition found in the *COCCINELLIDÆ*, but in that family a system of strong veins is developed in the outer half of the wing. The doubling of the wing in the middle is an adaptation to the extreme shortness of body in most *ENDOMYCHIDÆ*, but, although equally short forms are found in the *EROTYLIDÆ*, no similar adaptation occurs amongst them. We may therefore conclude that in the *ENDOMYCHIDÆ* the short form is the primitive one, and that in the *EROTYLIDÆ* the long type is the primitive one and the short-bodied forms have been derived from it. A characteristic feature of the wing of the *EROTYLIDÆ* is a small oval yellow area near the middle of the hind margin, with a peculiar texture upon the upper surface. This forms one-half of a stridulatory apparatus, the other half of which is a prominent finely shagreened fold beneath each elytron near the extremity of the inner margin. The oval patch upon the wing distinguishes it at once from that of the *LANGURIIDÆ*, which is without it and is also peculiar in the fact that it is stained a very dark colour. The wings of the Old World *EROTYLIDÆ* seem to be invariably transparent, although those of Tropical America are often deeply stained in a similar way. In many genera of *ENDOMYCHIDÆ* a dark wing-spot serving the same purpose as in the *EROTYLIDÆ* occurs, but it is more rectangular in shape, situated a little nearer the base of the wing and in the membrane lying on each side of a vein which runs close to the hind margin of the wing. These interesting organs,

which have only been revealed in the course of the studies undertaken for the purpose of the present work, are figured and described in detail in the introductory remarks to the respective families.

The three families exhibit an interesting series of stages in the reduction of the number of joints of the foot from the maximum of five to a virtually three-jointed condition, the latter being the minimum in the Coleoptera, except in one small genus, *Adimerus*, not belonging to the families under review, in which only two joints are traceable. In this progression the EROTYLIDÆ include the least, and the ENDOMYCHIDÆ the most, advanced stages. The tarsus consists of five fully-developed joints only in a comparatively small number of species of the former family (e. g., the genus *Dacne*). In the great majority the 4th joint has shrunk to a rudimentary condition and appears, as in the immense group of the Phytophaga, although probably by an independent process, as no more than a small knob at the base of the last joint. The process of reduction has generally been accompanied by a dilatation of the three basal joints, indicating that it is due to a changed mode of life. The primitive five-jointed tarsus is associated in most beetles with very active habits and frequently extreme agility, whereas the dilated and shortened foot gives the increased grasping power necessary to insects which live amongst foliage or in conditions in which the foothold is unstable, but it is accompanied by diminished speed of movement. Length of leg serves to increase the stride and consequently the speed, but the chief need being now a firm grasp of an insecure base, increased muscularity is gained by a shortening process, and that joint which, owing to its position at the base of the anchoring claw-joint, has least contact with the surface, can be advantageously dispensed with. The process has thus been the opposite to that brought about in the Ungulate Mammals, in which speed has been acquired by the lengthening of the limbs, and a simultaneous reduction in the number of digits, by lessening the contact with the ground, has contributed to that result. The pseudo-four-jointed tarsus is found throughout the LANGURIDÆ, but in the typical ENDOMYCHIDÆ a further reduction has taken place, the joints being apparently three, although really four, in number, the penultimate joint being a minute dilatation at the base of the last, but preceded by only two joints instead of three. Certain genera also occur in the family in which four well-developed joints are present, and it is obvious that these must either correspond to the four retained in typical ENDOMYCHIDÆ, the penultimate one being still in its primitive state, or the latter may have disappeared whilst all the rest of the original five remain, or both these conditions may be represented in different cases. Assuming the first case to be the correct one, Gerstaecker divided the family into two main groups, which he called ENDOMYCHIDÆ GENUINI and ENDOMYCHIDÆ ADSCITI, according as the penultimate joint is reduced or not. The assumed homology of that joint in the two

cases does not stand the test of later knowledge. In the genus *Asymbius* the hind tarsus is composed of four separate joints: on the middle foot the basal ones are partially united and upon the front foot the fusion is complete, only a minute bristle revealing "the mark of that which once hath been." In *Clemmus* all the feet are three-jointed but, when mounted in balsam, it is sometimes possible to trace a slight indication of division in the basal joint. Finally, in *Geoendomychus* occurs a three-jointed tarsus in which under the microscope are traceable vestiges of both division in the basal joint and an additional extremely minute penultimate

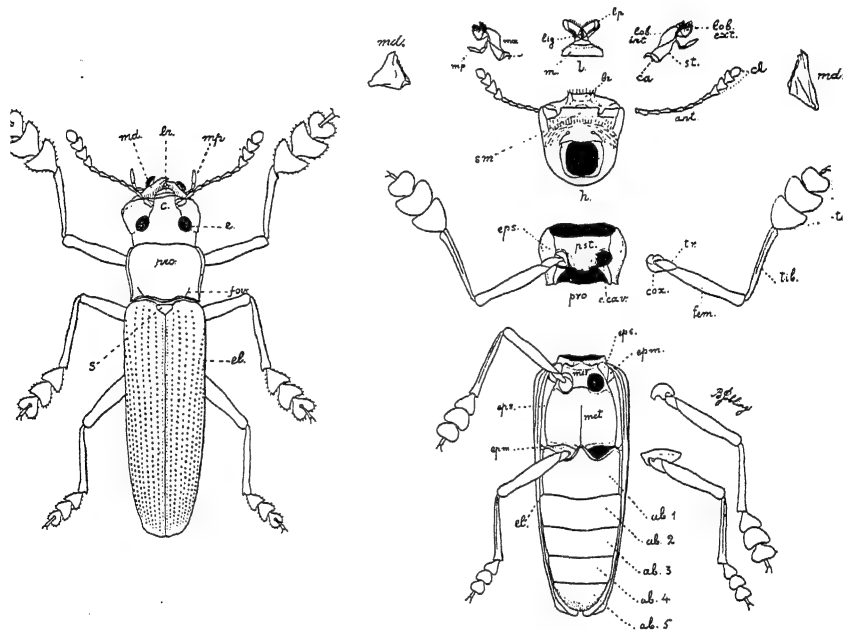


Fig. 2.—*Doubledaya viator*, female, to show the parts of the body.

h. head; *ant.* antenna; *cl.* club; *e.* eye; *md.* mandible; *mx.* maxilla; *mp.* maxillary palpus; *lob. int.* inner lobe; *lob. ext.* outer lobe; *ca.* cardo; *st.* stipes; *l.* labium; *lp.* labial palpus; *lig.* ligula; *m.* mentum; *sm.* submentum; *br.* labrum; *c.* clypeus; *pro.* prothorax; *fov.* fovea; *pst.* prosternum; *eps.* episternum; *c. cav.* coxal cavity; *cox.* coxa; *tr.* trochanter; *fem.* femur; *tib.* tibia; *tar.* tarsus; *mes.* mesosternum; *met.* metasternum; *epm.* epimeron; *s.* scutellum; *el.* elytron; *ab. 1, ab. 2, ab. 3, ab. 4, ab. 5.* abdominal sternites.

one. This seems to reveal the complete history of the change from the primitive five-jointed condition by the fusion of the second joint with the first and the gradual disappearance of the fourth. It is of course possible that a four-jointed foot, as for example in *Trochoideus*, may not always represent a more

primitive state than the typical pseudo-three-jointed one, but may have been reached by a reversion, comparatively recent, to the primitive condition.

In order to make clear the nomenclature used in the following pages for the various parts of the insect-body a diagrammatic representation in which the parts are displayed is given here (fig. 2).

Habits and Metamorphoses.

The habits of the component members of the three families here included seem to be homogeneous to an exceptional degree. Those belonging to the *EROTYLIDÆ* and *ENDOMYCHIDÆ* feed upon fungi, and especially upon those kinds which grow upon the boughs and trunks of trees, while the *LANGURIDÆ* in their early stages feed within the stems of living plants. Two or three more or less cosmopolitan insects (*Ancylopus melanocephalus* and *Trochoideus desjardinsi* amongst the *ENDOMYCHIDÆ* and *Euxestus parki* amongst the *EROTYLIDÆ*) form exceptions to the general rule, but otherwise no distinctive habits have been recorded in any part of the world. Two small species, each the sole representative of a genus of *EROTYLIDÆ* described for the first time in this volume (*Euxestoxenus* and *Cycloxenus*) have been recently discovered in the nests of Termites, where they probably feed upon the fungus intended for the young of their hosts. This is the greatest deviation from the normal mode of life discovered up to the present time. Of the two first-mentioned families the insects are ordinarily found living, frequently in considerable numbers, upon damp, decaying wood or beneath the bark of dead trees. Mr. George Lewis, who collected fifty species of *EROTYLIDÆ* in Japan, chiefly in the damp elevated forests of the mountainous districts, states that all are found feeding upon fungi in their larval and adult stages. H. W. Bates observed in Tropical America that "the very large fungi which grow in immense masses, springing up and decaying with great rapidity in the wet seasons on dead wood in the humid shades of the forest, are more especially the food of the *EROTYLIDÆ*," while the *ENDOMYCHIDÆ* "seem to prefer the smaller fungous growths. . . . They are not usually found in the large woody Boleti, but almost always on small Boleti of loose texture or on very minute, scarcely perceptible fungi." This might have been inferred from the fact that the jaws of the *EROTYLIDÆ* are of a much more robust type than those of the *ENDOMYCHIDÆ*. An African representative of the latter (*Trycherus flavipes*) was found by the late Mr. C. O. Farquharson to feed upon a peculiar filmy lichen growing upon a tree-trunk. The more regular outlines and usually more elongate form of the *EROTYLIDÆ* are correlated with their habit of burrowing into the large fungi which constitute their food, and a corresponding difference is found in the larvæ of the two families. Those of the *EROTYLIDÆ* are more or less cylindrical and smooth, their legs are short

and they are commonly provided with a pair of hooked, horny appendages at the end of the body to facilitate their movements in the burrows which they excavate in all directions in the *Boletus* or *Polyporus*. Upon reaching their full growth they drop to the ground and enter the pupa-stage beneath the soil in a rough cavity, forming no regular cocoon. The *ENDOMYCHIDÆ*, on the other hand, are found in all their stages in the same

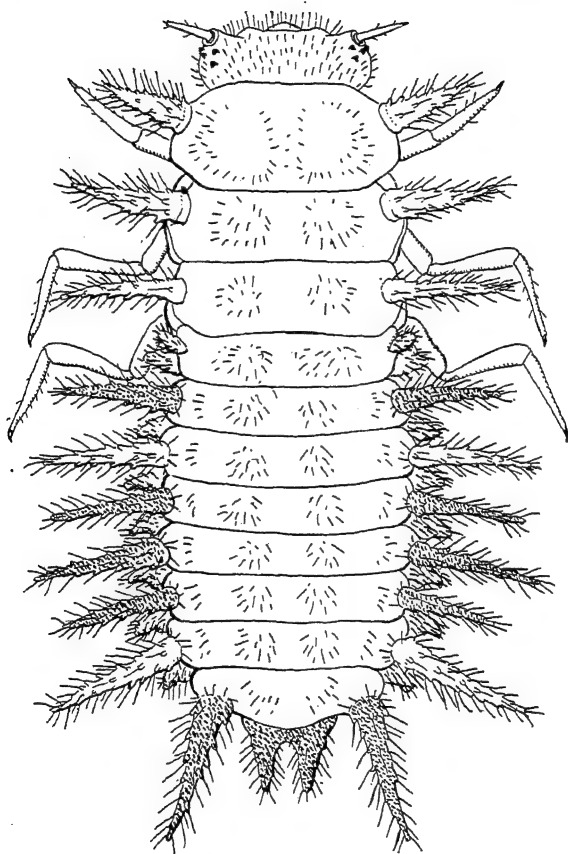


Fig. 3.—Larva of *Eumorphus quadriguttatus*, Ill.

place and at the same time. They are sluggish in their movements and expose themselves freely. The larvæ, like the adults, are often conspicuously decorated. Those which have been described, representing the genera *Endomychus*, *Eumorphus*, *Stenotarsus* and *Amphix*, are all of broad flattened shape, with leaf-like lobes or appendages at the sides of the thoracic and

abdominal segments. When full-grown they attach themselves by a sucker at the end of the abdomen to the surface upon which they have been feeding and, throwing off the larval skin, which remains at the posterior end of the body, pass the period of quiescence amongst others of their kind both older and younger. The absence of any attempt at concealment and the sluggish habits almost certainly indicate unpalatability in an exceptional degree to the ordinary enemies of insects. In some at least this is associated with the power of emitting an extremely offensive fluid. Mr. G. E. Bryant informs me that *Eumorphus quadriguttatus*, a species which occurs in the greatest abundance in our region, exudes a yellow fluid which possesses an astonishingly powerful and disagreeable odour, and he believes the habit to be common both to larvæ and adults. Mr. S. Kemp has traced a similarly offensive smell, in *Encymon cinctipes* and also in an undetermined species of *Indalmus*, to drops of fluid exuded from the femora. This no doubt occurs when the insects are disturbed and serves as a protection to them.

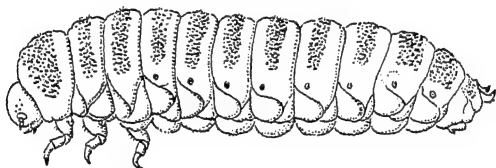


Fig. 4.—Larva of *Megaloduene*.

The best account of the early stages of a representative of the ENDOMYCHIDÆ is that of M. Bugnion in Ann. Soc. Ent. France, 1909, p. 282, on the metamorphoses of *Eumorphus pulchripes*, a variety of *E. quadriguttatus*, Ill., found by him in Ceylon. Figures of the larva, pupa, and imago are given. The larva (fig. 3) is a broadly oval, flat insect of a velvety-black colour, with a broad head and twelve body-segments, each of which carries a pair of leaf-like lateral appendages covered with spines, five of these appendages on each side being pure white in colour. The legs are rather long and slender, the antennæ short, and there are three or four minute ocelli on each side of the head. In the genus *Stenotarsus*, of which a South American species has been described by Bates (Journ. Entom. vol. i, 1861, p. 160, pl. 11) and a Madagascan species by Xamheu, the larva has the abdominal segments produced into broad lateral lobes and the surface is hairy. In *Endomychus*, the British representative of which (*E. coccineus*) is not uncommon, the thoracic and abdominal segments are dilated, the latter having a double range of lobes, and the prothorax forms a broad shield covering and concealing the head.

The larvæ of two Indian EROTYLIDÆ found by Nietner in Ceylon (*Episcapha quadrimacula* and *Amblyopus cinctipennis*) have been described by Candèze (Mém. Soc. Roy. Liège, vol. xvi, 1861, pp. 395, 397; the former is figured upon his pl. 6). It is rather elongate, tapering behind, and has a large prothoracic segment succeeded by eleven short segments, each bearing a transverse row of stiff spines, and the last carrying a pair of diverging hooks bent upwards. The larva of *Amblyopus cinctipennis* is of narrower shape and destitute of spines, and the terminal appendages are short. Perris has described and figured in Ann. Soc. Linn. Lyon, 1877, p. 572, pl. 14, the larva of *Tritoma*, which closely resembles the others. All have short but well-developed legs, a pair of very short antennæ composed of three or four joints, and a cluster of five or six ocelli on each side of the head. A South American genus (*Ægithus*) has a larva of shorter form and clothed with very long bristling spines, which must certainly preclude it from burrowing and seem to indicate a manner of life more like that of the ENDOMYCHIDÆ. The larva here represented (fig. 4) is that of a North American species of *Megalodacne*, a genus represented in India by numerous smaller but closely related species.

The larvæ of the LANGURIIDÆ are much more slender and cylindrical than those of the EROTYLIDÆ, but have otherwise a general resemblance to them. The number of segments is the same, the terminal one is furnished with a similar pair of horny hooks above, and the legs are short but well-developed. In the minute anatomy there are certain important differences. The spiracles are divided into two parts, whereas in the EROTYLIDÆ and ENDOMYCHIDÆ they are of simple annular shape, and the maxillæ consist of a single lobe with a sharp falciform termination. In the other two families the maxillæ are obtuse at the end and more closely united with the labium, of which only the extreme end is free. Dr. Adam Böving, who has long devoted himself to a study of the larvæ of the Coleoptera and has kindly given me his views on the point, considers the differences to indicate that the LANGURIIDÆ, although closely related to the CRYPTOPHAGIDÆ, are less nearly allied to the ENDOMYCHIDÆ and EROTYLIDÆ. The habits and metamorphoses of the LANGURIIDÆ have been described in one Indian species only, *Anadastus parvulus*, Wied., which is very injurious to Italian millet (*Setaria italica*), and two American species (*Languria mozardi* and *gracilis*), which attack the common nettle (*Urtica dioica*), red clover and various kinds of Compositæ, etc. The habits are very similar in these three species, and no doubt the great majority, if not all, the members of the family, have a similar life-history, the larvæ living within the stems of plants and feeding upon the interior tissue. The first-named species is dealt with and figured in all stages by Mr. P. V. Isaac, who has published an account of it, without giving it a name, in the Report of the 3rd Entomological Meeting at Pusa, 1919, p. 919:—

"The eggs are laid singly in the stems at some point from one to six inches above the soil. This takes place during the second month of the crop, when the stalks are rapidly elongating and the ears are being put out, and eggs are laid only in stems in which the central hollow is beginning to appear. The egg is thrust in at some spot just within an inch above a node. As elongation of the internode in grasses is confined to the portion just above the node, this region is softer and more vulnerable than the portion farther up, and is therefore selected for oviposition. Oviposition always leaves a mark, though it is often impossible to trace it on the stem itself. But on the outer leaf-sheath it remains distinct as a small dry oval patch, bearing three punctures in a horizontal row. The side ones seem to be caused by some lateral supporting structures on the ovipositor. The egg is passed in through the central one, and this is therefore the only puncture that extends into the stem. There is only one egg laid in an internode, and it has its long axis in a line with that of the stem. Though the egg is laid

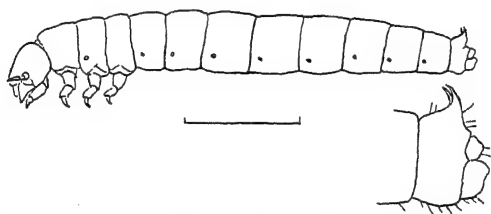


Fig. 5.—Larva of *Languria læta* and (below) terminal part much enlarged.

within an inch above the node, due to the rapid elongation of the stem, as mentioned above, it may be seen closer to the upper node than to the lower, and also far above the level of the impression left by the oviposition on the outer sheath.

“The grub as soon as out of the shell travels about in the hollow, and on reaching the base feeds a little on the pithy lining of the inner wall. It next attends to the ringing of the stem, which is begun on the second or third day after hatching, and is accomplished in a few hours. The cut goes completely round, and is so deep that it almost reaches the epidermis. . . . From now the grub is to be found above the ring. . . . Remaining above the ring and content with the adjacent tissue, as it grows it finds itself in an enlarging chamber. If the grub gets moist it is sure to die. This calamity is prevented by the ring, which prevents plant-sap from rising up, and by the accumulation of frass at the ring.

“It may be noted here that a single stem may be infested with more than one grub. There may at times be as many as four. But always there is only one grub in an internode, and it never bores

through into an adjacent one. When full-grown the grub pupates within the stem. If the stem now snaps at the ring, as occasionally happens, the mass of frass accumulated there, as mentioned before, acts as a plug and keeps the pupal-chamber closed and the pupa safe. The beetle on emergence has the exoskeleton soft and of an amber colour, but very soon the normal hardness and hue is gained, and within five days after emergence the full-fledged adult cuts a small hole in the wall of the stem and creeps out. The beetles are shy creatures, but a close observer can locate them moving up and down the leaves and stems. They seldom take to flight, a habit which makes hand-picking easy when control methods are necessary. . . . Eggs are laid during the second month of the crop, and they grow into adults in a month and a half. A generation is therefore produced before it is time to harvest the crop."

Dr. Adam Böving, of the United States National Museum, Washington, has kindly sent me examples of *Languria læta*, Lec., in all stages, taken from stems of *Argemone platyceros* in Texas, and a larva of that species is represented here (fig. 5). Observations made in America show that the females of this genus employ the mandibles in the operation of oviposition. Professor Comstock, in the Ann. Rep. U.S. Dept. of Agriculture, 1879, p. 199, says of *L. mozaridi*:—"In localities where this beetle is abundant if the stems of red clover be carefully examined some time in June on many of them will be seen one or more small discoloured spots which seem to have been made by the gnawing of some insect. If one cuts into the stem at one of these spots, a slender yellowish egg 1.7 mm. (about $\frac{1}{16}$ inch) long, rounded at both ends and somewhat curved, will be found imbedded in the pith, the gnawing having evidently been done for the purpose of penetrating the comparatively hard exterior and allowing the egg to be easily pushed in. Often the egg is found as far as 6 mm. (nearly $\frac{1}{4}$ inch) from the opening, which shows that the mother insect must have forced her whole body into it."

In a later note in 'Insect Life,' vol. ii, 1890, p. 346, Mr. F. H. Chittenden writes:—"While on a collecting trip during June of last year, I observed a specimen of that handsome little Erotylid beetle, *Languria Mozardi*, Latr., on a composite plant, the Daisy Fleabane (*Erigeron ramosus*, Walt.), the stem of which it was engaged in gnawing, having already cut with its mandibles a fair-sized hole preparatory to the deposition of its eggs."

The larva of *Anadastus parvulus*, Wied., according to Mr. Isaac, is a moderately long-bodied insect on emergence from the egg, but soon becomes much more slender. The antennæ are very short and close to the base of each and just posterior to it is a group of four small eye-spots. The thorax has three pairs of short, stout legs, each bearing a sharp terminal claw. The abdomen consists of nine visible segments, the last having above a pair of sharp spine-like processes curving backwards. The

body is pale, cylindrical and smooth, bearing only scattered fine hairs. Upon attaining its full growth and assuming the pupal stage, the eyes, antennæ, wings and legs of the beetle become visible, the abdomen, although shortened, is still long, and bears, besides a pair of sharp dorsal processes at the extremity, a stouter ventral pair upon the penultimate segment, directed backwards, and each segment except the terminal one has a transverse row of spines along the middle which become stronger as they approach the extremity. These evidently replace the legs, useless in this stage, and enable the pupa to move from the pupal chamber previous to its final change to the adult form.

Distribution.

All the three families are essentially tropical, with very few representatives in temperate regions. The LANGURIIDÆ have not a single known representative in the Palæarctic Region, which is surprising, since they live in the stems of various kinds of plants common throughout that region. The EROTYLIDÆ and ENDOMYCHIDÆ, being especially attached to fungi which attack decaying trees, are characteristically forest insects. Each has a few members, small in size, in Europe, including the British Islands; but, whilst the EROTYLIDÆ flourish more in the New World than the Old, Tropical America producing not only a greater number of species but also much greater exuberance of both form and colouring than the rest of the world, in the ENDOMYCHIDÆ the largest and most remarkable forms, as well as many of the most brilliantly adorned, are found in the Old World and especially in the Oriental Region, and those of the Western Hemisphere, if not inferior in numbers, are of conspicuously smaller average size. In India both groups are well represented, the number of known species being almost the same in each case. One remarkable Endomychid genus of nine species (*Eucteanus*) has not been found outside our area, and several genera of EROTYLIDÆ (*Rhodotritoma*, *Tetratritoma*, *Dromodacne*, *Idiodacne*, *Trichulus*, etc.) are also confined to India so far as known.

The LANGURIIDÆ are a smaller family than either of the others, the known species numbering only about 400 in all, as compared with about 1500 EROTYLIDÆ and 750 ENDOMYCHIDÆ, but the number known from our region is almost the same. This is so large a proportion of the total that we are justified in regarding India as the headquarters of the group, a view confirmed by the fact that the largest and most extraordinary of all its forms, the species of *Megalanguria*, *Doubledaya* and *Macromelea*, are chiefly Indian, and several of the most peculiar genera (e.g., *Macromelea*, *Apterodastus*, *Cladoxenus*) have not been found in any other country. The three families are represented only by a very few species in Australia. The ENDOMYCHIDÆ and LANGURIIDÆ are unknown in New Zealand and

apparently, except for the cosmopolitan *Trochoideus desjardinsi*, throughout the islands of the Pacific.

It may be stated as a general rule that the geographical range of the species of the three families, compared with those of other groups, is very restricted. The genera *Stenotarsus*, amongst the ENDOMYCHIDÆ, and *Tritoma*, amongst the EROTYLIDÆ, are found in both hemispheres and in almost every part of the Tropics, but their species are very numerous and localised, and with these exceptions the faunas of the Eastern and Western Hemispheres are very markedly different in their features and outward aspect. This localisation, which is apparent both in the species and genera, may perhaps be connected with the generally sluggish habits of the insects. Gorham has remarked of the important Oriental genus *Eumorphus* that its species are widely distributed. One of them (*E. quadriguttatus*) is found in profusion from the Western Himalayas to the Malay Peninsula, Sumatra, Java and Borneo, as well as in Southern India and Ceylon; but this is quite an exception, all the other species being confined to the western part of the Malayan Region, extending at the most as far as Assam, and most of them restricted to a small part of that area. Most of the Javan species have never been found elsewhere, and no ENDOMYCHIDÆ found in Ceylon, with the exception of the species just mentioned, two cosmopolitan species and a *Saula* (*S. ferruginea*), of exceptionally wide range, are known to occur outside that island.

The cosmopolitan species referred to are *Ancylopus melanocephalus* and *Trochoideus desjardinsi*. These two little insects, in entire contradiction of the habits of their kind, occur throughout a very large part of the earth's surface.. Amongst the EROTYLIDÆ there is another species with a more or less cosmopolitan range (*Euxestus parki*). There is no evidence that any one of these insects has been carried by human agency, but they seem to have acquired feeding habits at variance with those of their allies. *Trochoideus desjardinsi* is apparently associated with the Coconut Palm, its range being similar to that of the tree (see p. 404).

Colour and Pattern.

The three families are three specialised branches of the polymorphic host of Clavicorn beetles, with very well-marked distinctive features in their highest development, but whose more primitive members have so much in common with their allies that the line of demarcation is not easy to define. Generally speaking, the members of our groups are distinguished from their nearest allies by greater size and more lively colouring and may be said to bear the same relationship to other Clavicornia as the Longicornia bear to the Phytophaga. As the wood-boring Longicornia, probably in consequence of adopting a mode of life which provides them with practically unlimited nourishment,

capable of assimilation without interruption by seasonal, climatic or other limitations, have attained a much larger average size than the other Phytophagous groups, so our three families have found specially favourable conditions of life enabling them to attain a more vigorous development than the multitude of small and inconspicuous insects most nearly related to them. It is probable that the chief factor by which this privileged position has been acquired is a high degree of unpalatability, indicated by the prevalence of a type of coloration rendering them extremely conspicuous, which, were they fully palatable, must have resulted in their extermination.

One of the most striking features of the three families is the prevailing gaiety of their colouring. The *ENDOMYCHIDÆ* possibly include a majority of small species amongst which seemingly inconspicuous brown or tawny shades predominate, but it is by no means certain that even these are inconspicuous in their natural environment. As soon as dimensions a little more considerable are attained, bright colours and combinations of colours become the rule, and the average size is large in comparison with that of the groups most nearly related. Among the *EROTYLIDÆ* and *LANGURIIDÆ* dull-coloured species are few. But although all three groups are remarkable for bright colouring, they exhibit two very different types of pattern. In the two fungivorous families, *EROTYLIDÆ* and *ENDOMYCHIDÆ*, although they are less closely related one to the other than are the *LANGURIIDÆ* to either, the predominant pattern, a combination of black and orange or red, is the same. In the stem-boring *LANGURIIDÆ* this characteristic type of pattern is quite absent and metallic colours or very simple combinations of these with scarlet prevail. The complex patterns which are so frequent in the other groups are never found, but anything in the nature of cryptic (or concealing) coloration is even more conspicuously absent than in the *EROTYLIDÆ* and *ENDOMYCHIDÆ*. Evidently there is an important relation between the coloration and the environment, although the object is not assimilation to that environment. Some of the smaller kinds of *EROTYLIDÆ* have the thorax, or the head and thorax, red or yellow and the remainder of the body metallic blue or green, as in the *LANGURIIDÆ*, and it is probable that these are often found in the same situations as the *LANGURIIDÆ*. Regarded as warning coloration, these striking combinations of orange or red with black, blue or green become comprehensible as serving to minimise the casualties due to tasting by birds or other animals, which might otherwise fail to recognise again species previously found to be nauseous. When it is remembered that black and orange combinations occur in numerous other groups of insects endowed with offensive qualities (wasps, Lycid and Meloid beetles, etc.), it seems not improbable that the coloration should have become associated in the brain of birds and other insectivorous creatures with the idea of offensiveness.

I have already mentioned (p. 6) the offensive odour emitted by various ENDOMYCHIDÆ. Dr. Guy Marshall has recorded, in Trans. Ent. Soc. Lond. 1902, p. 522, a similar fact with regard to the EROTYLIDÆ, the species referred to as a "large *Encaustes*" being, he informs me, *Megalodacne grandis*, F. Further evidence in favour of the supposition that these insects enjoy a relative immunity is supplied by the extent to which they are mimicked by others. Although few instances have been recorded, many striking cases might be mentioned. Perhaps the best example is found in the astonishingly close imitations in Tropical America of many of the largest and most conspicuously coloured of all the EROTYLIDÆ, belonging to the genera *Erotylus*, *Cypherotylus*, *Morphoides*, etc., by numerous Heteromorous beetles of several genera, especially *Cuphotes* and *Pœcilesthus*, and of certain quite dissimilar ENDOMYCHIDÆ by other species of the latter genus (e. g., *Amphix subcordatus* and *discoideus* by *Pœcilesthus viridipennis* and *circumcinctus* respectively).

In the paper referred to above, Dr. Marshall has recorded finding two species of CARABIDÆ (*Thyreopterus flavosignatus* and *Arsinoe fraterna*) in company with a Rhodesian Endomychid whose aspect they closely simulated. The Endomychid model I have since identified as *Trycherus fryanum*. In the Oriental Region the species of another Carabid genus, *Lioptera*, faithfully imitate the patterns of species of *Engonius*, *Episcapha* and *Micrencaustes* occurring in the same localities. Different forms of the Tenebrionid genus *Menephilus* also mimic species of *Trycherus* and of the Erotylid genus *Megalodacne*. Indian representatives of the last genus are closely imitated by species of *Basaninus* and *Ceropria*, also belonging to the TENEBRIONIDÆ, and a group of CARABIDÆ, of the genera *Craspedophorus* and *Dischissus*, all ornamented with four bright orange spots, are found on the tree-trunks haunted by the strong-smelling four-spotted *Eumorphi*. In another group of beetles, the Longicornia, a highly curious instance was observed by the late R. Shelford (Proc. Zool. Soc. Lond., 1902 (2), p. 247), in which a close resemblance to a species of the Endomychid genus *Spathomeles* is brought about, the mimic, *Zelota spathomelina*, not only reproducing the colour and pattern of its model but having an elevation on each elytron surmounted by a pointed brush of converging hairs, which imitate the stout spine possessed by the Endomychid in the same situation. In most cases imitation is not so close as this, a general resemblance to a group of species rather than mimicry of a particular one being achieved. For example, a strange Carabid (*Physodera dejeani*), with a wide range in the Indo-Malayan Region, has an unmistakable resemblance to the Endomychid type. It has the lurid purple colour and general appearance of *Encymon resinatus*, which is found throughout the greater part of its range, but with the addition of features, such as a pair of bright yellow spots at the posterior end of the body, characteristic of other species of *Encymon* found in certain portions of that range.

The LANGURIIDÆ, found in an entirely different environment and exhibiting a different scheme of coloration, are also found associated with other insects in mimetic groups. The Tenebrionid genus *Acropteron* in Tropical America is composed of numerous species which have assumed the attenuated shape, polished surface and metallic lustre of the LANGURIIDÆ of the same region, and Shelford has figured in Proc. Zool. Soc., 1902*, a group of beetles, of which one is the Indian *Pachylanguria elongata* and the others a Longicorn, a Melyrid and a Hispid, all having the same colouring and general aspect and all occurring together. There is also a genus of ELATERIDÆ, *Agonischius*, a species of which (*A. feæ*) is an even closer mimic of the *Pachylanguria*, while others (*A. altus*, etc.) similarly resemble other Indian Languriids. Whether the LANGURIIDÆ should be regarded as models or as mimics the evidence is scarcely sufficient to show.

The occurrence of the same colour-scheme is therefore not a trustworthy guide to the affinities of any of these insects, but is liable to lead us astray unless apparent identity in this respect is corroborated by a careful comparison of anatomical characters. Each family contains insects identical in pattern but belonging to different species and genera, and identical patterns are apt to occur in species belonging to the two families (EROTYLIDÆ and ENDOMYCHIDÆ) which live in the same places, so that the pattern is rather an indication of the habitat than of the relationship. On the other hand, the pattern and coloration of the EROTYLIDÆ of the New World are in general quite different from those of the Old World forms. Setting aside certain American species belonging to Old World genera like *Megalolacne*, which may be regarded as relatively recent immigrants by way of Eastern Asia and Western North America, there is less similarity in coloration between the Old and New World representatives of either family than exists between representatives of the two families in the Oriental Region. In Tropical America there is much less uniformity of colouring, although striking resemblances also occur between species of the two groups.

Whatever may be the significance of these facts, it is doubtful whether any other groups of animals provide better material than the EROTYLIDÆ and ENDOMYCHIDÆ for the study of the evolution of colour-pattern in Nature. The greatest development is undoubtedly to be found in the EROTYLIDÆ of Tropical America, but the narrower range of variation found in the Eastern Hemisphere perhaps affords a clearer view of the path of development which has been followed. In both families the predominant Eastern pattern consists of a black ground with an irregular transverse red or yellow band near the base of each elytron and another before the apex. Usually the pale bands show small tooth-like projections from their edges, which, although

* Pl. xxiii, figs. 58-61, and pp. 271, 272: the *Pachylanguria* is there referred to as *Tetralanguria pyramidata*.

apparently fortuitous, are constant and exactly correspond in the anterior and posterior band, so that if produced they would unite, isolating longitudinal black stripes. Such striped forms, although perhaps not now found in the East, exist in Africa both in ENDOMYCHIDÆ and EROTYLIDÆ (e. g., *Indalmus graphicus* in the former and *Megalodacne ornatissima* in the latter), and the stripes are found to be limited by the lines of punctures when present. The primitive colour of the chitinous exterior of an insect, as shown in the immature condition before pigmentation has begun, or in any insect which in its natural environment is not exposed to light, is a reddish yellow. Pigmentation, when it takes place, begins by the deposition of dark colouring matter in certain specially susceptible places, such as the edges of the different segments or parts of the body, in the punctures, in the elevated ridges sometimes formed between the rows of punctures, or the thickened shoulder and apical calli of the elytra. When the colouring matter is produced in greater quantity, fusion between such dark areas takes place. Longitudinal bars upon the elytra may unite, forming a large discoidal mass upon each, and the lateral extension of this to unite with a dark marginal line will result in the isolation of pale post-humeral, and ante-apical bands upon a black ground, such as I have described as forming the predominant pattern amongst Old World ENDOMYCHIDÆ and EROTYLIDÆ. All the stages in the process may be found in different existing species. The next stage is the gradual shortening and rounding of the irregular transverse bars, forming four approximately regular patches, different stages in which process are seen in the species of the genus *Pedanus*. The very common Oriental ENDOMYCHIDÆ constituting the genus *Eumorphus*, practically all of which are decorated with four yellow patches in the same situation, show still further stages. In different species the four yellow patches may be seen gradually losing their remaining irregularity, and finally acquiring a perfectly round shape. This process may be accompanied by simultaneous structural changes in the surface and, where present, in the distribution of the hair clothing it. It may often be noticed that the lighter-coloured areas are less strongly punctured than the dark background, resulting in a more shining surface. The light areas may also become somewhat elevated, and in certain cases (e. g., *Eumorphus ocellatus*) the combination of bright colouring, elevation and glossiness produce the effect of inset jewels or eye-spots. Sometimes the bright markings have in the living insects a beautiful golden or iridescent lustre, which vanishes after death but returns upon immersion in water or other liquid, being due to refraction produced by a film of moisture beneath the cuticle and analogous to the iridescence of a soap-bubble. I have found this lustre in EROTYLIDÆ which have been preserved in spirit, and it is probable that many ENDOMYCHIDÆ also possess the same beautiful colours in life.

In some of the species of *Eumorphus* and *Amphisternus* the

four yellow spots have shrunk to very small dimensions, and in certain EROTYLIDÆ also the four elytral red patches are very inconspicuous. Still further shrinkage has produced in other species of the genera an entirely black surface, so that there is reason to believe that the comparatively few species of these insects which are entirely black have reached that condition through a lengthy cycle of changing and sometimes complicated patterns. Looked at in this light, a peculiar coloration such as that of *Amblyopus flaviventris*, a black insect with the abdomen bright yellow, becomes explicable as a probable stage in the evolution of a black insect, the unexposed parts of the body being, it may be supposed, commonly in a more primitive condition than the exposed parts.

The object of this progressive simplification of pattern, it can scarcely be doubted, is, in these families, to attain the greatest possible measure of conspicuousness in relation to the environment. Although, with the exception of the minute forms previously mentioned, practically all these insects must be very conspicuous in their natural environment, the acme seems to be attained in the genus *Eumorphus*, and with evident success, for its members are amongst the most abundant of all and show their immunity from the risks which beset other insects by the freedom with which they display themselves in exposed situations. Many species of the genus have the outer edges of the elytra broadly expanded, which may be a device for giving them greater apparent size and so still further increasing their conspicuousness.

In the genus *Amphisternus* the elevation of the bright-coloured spots has developed to a very remarkable degree (cf. fig. 51, p. 286). In certain species these form strong tubercles tipped with red, but in others, several of which are found in the Malayan Region, one being represented on p. 271, the tubercles have developed into very long, sharp spines and the red colour has disappeared.

EROTYLIDÆ.

In the 'Genera des Coléoptères' of Lacordaire, Chapuis has included in this family three tribes—LANGURIIDES, HELOTIDES and EROTYLIDES. In the more recent classification of Ganglbauer's 'Käfer von Mitteleuropa,' although the HELOTIDES are excluded and referred to the family CUCUJIDÆ, the LANGURIIDES are included and two other groups are added, Ganglbauer's EROTYLIDÆ consisting of four subfamilies—EROTYLINÆ, LANGURIINÆ, CRYPTOPHAGINÆ and ATOMARIINÆ. The two latter groups consist of minute insects, numerous in species but whose Indian representatives are at present very little known. Like the LANGURIINÆ, they differ from the EROTYLIDÆ in having the cavities for the front coxæ incompletely closed behind. The genera *Diphyllus*, *Diplocælus*, *Cryptophilus* and *Xenoscelis*, placed amongst the CRYPTOPHAGIDÆ in Canon Fowler's Introductory Volume to the present series, are included in the EROTYLINÆ by Ganglbauer, having their coxal cavities closed. On account of the peculiarity of their head-structure I prefer to exclude them, but with those exceptions the EROTYLIDÆ, as here regarded, is equivalent to Ganglbauer's subfamily EROTYLINÆ. I have therefore practically reverted to the limits of the family as accepted by Lacordaire in his 'Monographie des Erotyliens.' In that work, in which was admirably comprehended all available information upon the subject up to the year 1842, the author remarks that the immense continent of Asia, using the term in its widest significance, had to that date produced only three representatives, one of which, reputed to be Indian, he rightly regarded as doubtful. Eight species now recognised as inhabitants of India are actually included in his Monograph, but even that number is a minute proportion of the 129 figuring in the present volume, whilst that no doubt is only a fraction of the number actually existing within the limits of the Indian Empire. From the African Continent Lacordaire enumerated nine (really only seven) different species, which bears about the same proportion to the number of forms known to-day. With such scanty materials it is not surprising that he was not in a position to devise a scheme of classification applicable to the considerable host of Old World EROTYLIDÆ since discovered. Probably owing to the absence of the necessary specimens for adequate anatomical study, he was led into an unfortunate error in regard to the two genera, *Encaustes* and *Aulacochilus*, to which he referred about half the Oriental species known to him. Actually very nearly related, these two genera were assigned, through a mistake as to the form of the maxilla of the former, one to the first and the other to the second of his two primary divisions, the second division being composed entirely of American genera, with the exception of *Aulacochilus*. This error has ever since stood

in the way of a proper understanding of the Erotylid phylogeny. The classification offered by Chapuis in the 'Genera des Coléoptères' (1876), without rectifying the mistake, has introduced various fresh elements of confusion, being a compilation and not the result of original research. Herr Kuhn's comparatively recent classification in Wytsman's 'Genera Insectorum' is also a compilation adding nothing to our knowledge of the phylogeny of the group, the author having had access probably to no adequate collections upon which to base a really useful work of this kind. Dr. Heller has added considerably of late years to the list of genera and species of Old World EROTYLIDÆ, but has been content to accept the grouping of his predecessors. The only existing work dealing particularly with the Indian Fauna is a paper by the Rev. H. S. Gorham in the 'Annals of the Genoa Museum' for 1896, describing the valuable Burmese collections of Leonardo Fea. In that paper 33 species of EROTYLIDÆ were enumerated, of which 18 were previously unknown.

In 1917 I published a Revision of the EROTYLIDÆ of Africa (Ann. Mag. Nat. Hist. ser. 8, vol. xx, p. 137), setting forth what appeared to me to be the natural grouping of the genera. The study of the Indian Fauna has shown a very close relationship to that of Africa, the majority of the genera occurring in the latter continent being found also in India, whilst acquaintance with the larger number of genera and species composing the present fauna has confirmed the conclusions previously reached, and the system here adopted is essentially that propounded for the African Fauna.

The few peculiar genera for which I have constituted the subfamily EUXESTINÆ being set aside, all the Old World genera fall naturally into the two main divisions which I call the subfamilies DACNINÆ and TRITOMINÆ and which are distinguished by correlated characters in the structure of the tarsus and the organs of the mouth. Although not of an obvious nature, these differences are deep-seated and easily apprehended on a careful examination, and it can scarcely be doubted that they are related to some ancient divergence in the mode of life.

Structure.

As compared with the ENDOMYCHIDÆ, the EROTYLIDÆ are characterised by greater regularity of outline, the body being almost always oval in shape, although varying from extremely short and highly convex, approaching the hemispherical, to a narrowly elongate, and sometimes rather flattened, form. In a few cases, as in the very common *Episcapha quadrimacula*, there is a uniform clothing of very fine hair, and in two, *Trichulus pubescens* and *Cycloxenus hispidus*, the clothing is coarse and conspicuous, but this is quite exceptional and the surface is usually glossy. The lower surface is smooth like the upper, or bears a thin and inconspicuous hairy clothing. The legs are moderately

and almost equally separated, the hindmost pair not much wider apart than the others, as they are in the *ENDOMYCHIDÆ*. The prosternum is produced beyond the front coxæ, and there dilates and meets the episterna, so that the coxal cavities are completely closed (fig. 1, *a*) and no free prosternal process is formed, as in the other two families dealt with in this volume. The dilated posterior margin of the prosternum is frequently a little concave, closely fitting the slightly rounded mesosternum. In the genus *Microsternus* it completely covers the latter and meets the front edge of the metasternum in the position of rest. In *Tritoma* and allied genera a sharp, raised line appears on each side of the prosternum, bordering the coxal cavity and extending both backwards and forwards (the so-called "coxal" or "tangential" lines). The two lines may meet near the anterior margin of the prosternum, enclosing a flat triangular area, or may remain more or less widely separated, and their length and direction are of importance for the discrimination of the species. In *Micrencaustes* and some species of *Tritoma* there is a definite triangular area, the apex of which forms a projecting process in the middle of the front margin of the prosternum. Similar "tangential" lines to those of the prosternum, but diverging instead of converging, may be found upon the metasternum (arising near the middle coxa) and the basal ventral sternite (arising near the hind coxa), or upon the former but not the latter. The mesosternum is short, the part between the middle coxæ assuming a transversely rectangular or semicircular shape. Mesosternum and metasternum meet in a straight suture, and the latter also meets the basal sternite of the abdomen in a straight line between the hind coxæ. The basal sternite is always longer than those that follow it, four in number, but the difference is not so great as in the *ENDOMYCHIDÆ*.

Legs.—The coxæ lie deeply embedded in their cavities, so that the legs are brought close to the lower surface of the body. The trochanters are small, scarcely separating the coxæ and the femora, and the latter are of simple form, generally slender but sometimes flattened, in which case they are usually grooved along the lower edge for the partial reception of the tibiæ. The latter in such cases are also flattened and more or less dilated towards the end, which is hollowed externally to allow the tarsus to be folded against it closely. All stages are found between forms with short and stout legs and triangular tibiæ, broadly truncate at the end, as in many species of *Tritoma*, and others in which they are very slender, as in *Dromodacne*. The tarsi are always composed of five joints, but differ considerably in structure. In those which must be regarded as the most primitive the joints are rather cylindrical and diminish in size from the first to the fourth, the fourth being small but free. The joints are never much flattened, and never increase in width from the first to the third. This group I have called the subfamily *DACNINÆ*.

In the second subfamily, the *TRITOMINÆ*, the tarsi are of the type usually called tetramerous or four-jointed, the fourth joint

being reduced to a mere vestige at the base of the last one, and the first three are distinctly flattened and each is broader than the one preceding it. This difference in the foot is correlated with differences in the mouth-structure, and must have some relation to the mode of life, either present or past, of the insects.

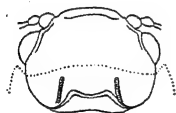
The lower surface of the three basal joints of the tarsus is always covered with a dense pad of hairs, which may form conspicuous fringes at the sides, and in some *DACNINÆ* these fringes may produce an appearance similar to that of the flattened joints of the *TRITOMINÆ*, but this is only superficial and does not result, as in the latter, in the foot being widest at its third joint. The two claws with which the last tarsal joint terminates are simply curved, divergent and symmetrical. There is no pulvillus, but the extremity of the claw-joint may be produced on its lower side and bent back between the two claws (e.g., in *Triplatoma*).

Head.—The head is rather short, without any neck portion behind, and therefore deeply sunk within the thorax, into which it can be retracted as far as the eyes.

Antennæ.—The antennæ do not quite attain the development for which those of the *ENDOMYCHIDÆ* are so remarkable, but show a considerable range of variation and are of great importance in classification. There is always a terminal club, more or less flattened, which in *EUXESTINÆ* is consolidated into a single large discoidal joint, but in the great majority is composed of three joints. It is of simple oval shape in many cases, but sometimes short and broad like the head of a hammer (*Petaloscelis*, *Idiodacne*) and in others lengthened and flattened like the blade of an oar (*Episcapha*, etc.). Occasionally the club is composed of four (*Tetratritoma*) or five joints (*Spondotriplax*). The first joint of the antenna is generally rather large, the second rather small and bead-like and the third commonly, but not invariably, longer than the rest and sometimes very long. Although ordinarily nearly symmetrical the club is rarely quite so, and in certain genera, such as *Petaloscelis* and especially the African *Mimodacne*, becomes strongly asymmetrical by the oblique articulation of its joints.

Eyes.—The eyes are always lateral and more or less hemispherical in shape, but vary to a remarkable degree in the size both of the clusters and of the individual facets. In describing the size of the eye in relation to that of the head I usually refer to the "radius" of the eye. This term is used for the apparent width of that part of the eye seen when the insect is looked at from above. The difference in the size of the eyes is no doubt correlated to some extent with the degree of intensity of the light to which they are normally exposed, but it seems scarcely probable that, as in other families of beetles, those with the largest and most coarsely-faceted eyes are nocturnal in habit. The facets are never of extreme fineness nor the eyes glassy in their texture, each facet being highly convex, but in comparison with the size of the head the masses may be large or small in species not distantly related, the difference being produced by

increase in size of the separate facets rather than by their multiplication. Thus in *Amblyopus*, in which the eye-masses reach their maximum size in proportion to the head, the separate facets are large, and in the numerous little species forming the genus *Tritoma*, in which they occupy a much smaller area, the facets are much smaller and probably not less numerous. In one group, confined to the East and especially characteristic of New Guinea and the Papuan Region, but represented in India by the genera *Triplatoma*, *Paracoptengis* and *Trichulus*, the eye-facets, while individually large, are also reduced to very small aggregates, so that seemingly the visual powers must be comparatively feeble. To judge by the bright colours and conspicuous patterns found amongst the Papuan species, this group is not nocturnal in habits.



H



I



J

Fig. 6.—Head, showing stridulatory files of: *Tritoma bipustulata*; I, *Phonodacne stridulans*; J, *Thallis perplexa*.

Vocal Organs.—Two entirely distinct types of vocal or stridulatory organs are found in the family. The component parts of the first type are placed, as in the LANGURIIDÆ and ENDOMYCHIDÆ, upon the top of the head and inside the cavity of the prothorax, coming into view only when the head is drawn out of its cavity. There is not, as in the ENDOMYCHIDÆ, any accessory external structure by which its presence is indicated. For this reason the existence of the organ has remained until recently practically unknown. It was detected by Mr. Gorham in a single species, named by him *Episcapha stridulans*, but is really of wide occurrence, and in the small species composing the genera *Dacne*, *Amblyopus*, *Tritoma*, etc., is almost general. The common Indian *Amblyopus cinctipennis* well shows the typical structure. If the head is drawn completely out of its cavity, it will be found that its hind margin is not straight, but that there is a nearly rectangular excision above in

the middle. On each side of this excision and close to its lateral edge a narrow elevated longitudinal strip may be seen which, under the microscope, will be found to consist of exceedingly fine and close transverse ridges, the two "files" being parallel to one another and rather far apart (fig. 6, H). If the cavity in the prothorax which receives the head is examined, it will be found that the connective membrane is attached close to the edge ventrally but at some distance from the edge on the upper side. Beneath the margin of the overlapping dorsal surface a sharp ridge will be found, close to the margin in the middle, but curving away from it on each side in the part corresponding in position to the files on the head. Being at right angles to the files, this

ridge is so placed as to scrape the microscopic ridges when the head is protruded and withdrawn, the vibrations so set up producing a musical note of the quality of which we can only judge by analogy, for it has not yet been heard by human ears. The organ, however, is of essentially the same character as those of which the sound produced is fairly familiar in other beetles, such as *Geotrupes* and many *Longicornia*. In these the organs are situated in other parts of the body, but they occur in the same situation in the *EROTYLIDÆ* as in *LANGURIIDÆ* and *ENDOMYCHIDÆ*, in *HISPIDÆ* and in certain genera of *NITIDULIDÆ*, etc.

Occasionally the portions of the pronotum immediately above the head-files are more or less translucent (*Rhodotritoma*), which suggests that they play some part in the sound-production, as seems to be the case in the *ENDOMYCHIDÆ*, where there is a definite membranous fringe in this region, and in certain *HISPIDÆ* (*Estigmena*, *Spilispa*, etc.), where there is a prominent lobe. In *Rhodotritoma* the two files are brought a little closer together than in *Amblyopus*, and lie in front of the occipital excision. In the genus *Dacne*, which includes two British and three Indian species, the free front margin of the pronotum is noticeably produced between the eyes, to avoid covering which there is a rather deep excision on each side. In correspondence with this extension of the thorax (and the resulting changed position of the hidden plucking ridge) the files upon the head occupy a more forward position, and converge from back to front. In an African species which has been placed in this genus (*D. capensis*) the production of the thoracic margin is absent and the stridulating organs are also wanting. In two Australian *EROTYLIDÆ* known to me (*Thallis perplexa* and *xanthosticta*) there is only a single file occupying the middle line of the head (fig. 6, J).

It is remarkable that, although these organs are almost general in the small species of *EROTYLIDÆ*, they appear to be quite exceptional amongst the larger forms, and in the New World genera are nearly absent. In the *TRITOMINÆ* they are found in the very numerous small species forming the genera *Tritoma*, *Rhodotritoma*, *Petaloscelis*, *Amblyopus*, etc., but not in *Aulacochilus*, *Micrencaustes* and *Encaustes*, consisting of relatively large insects. In the *DACNINÆ*, with the exception of the genus *Dacne*, they have been found only in three species, constituting the genus *Phonodacne* (see fig. 6, I). Here, as in *Dacne*, the files are placed farther forward than in the *TRITOMINÆ*. The larger species are not without a vocal apparatus, however, for another and altogether different type of organ, also of recent discovery, occurs in the family. The component parts of this are found upon the wings and elytra and are described a little farther on.

Mouth-organs.—The organs of the mouth are adapted for dealing with fairly hard substances. The mandibles are very solid and powerful, short, with their anterior biting part bent almost at a right angle to the base, with the tip cleft into two sharp but short points. In certain genera, *Encaustes*, *Micrencaustes*

and *Aulacochilus*, the maxillæ have the inner lobe furnished at the end with two strong and sharp teeth, but in all other Old World genera they are quite blunt and useless for mastication. They are always well-chitinised and rather long, owing to the elongate stipes, but the two terminal lobes are short, the outer one broad and rounded at the end, the inner one narrow. At the outer side, close to the point of attachment of the outer lobe, is articulated the maxillary palpus, and in many of the small TRITOMINÆ the last joint of the latter is so much enlarged and the terminal part of the maxilla so much reduced that this organ may probably be regarded as merely a carrier for the palpus. These sensory appendages are of great importance. As usual, the maxillary palpi consist of four, and the labial palpi of three, joints. The sensory surface is at the extremity of the terminal joint, which is hollowed and filled with soft tissue, whilst the remainder of the surface is very hard and chitinous. In the less-specialised division of the family, the subfamily DACNINÆ, the area of the sensitive surface is comparatively small, the terminal joint, although not long, being generally elongate-oval and only its tip hollowed, but sometimes it is dilated at the end so that the sensitive area is increased and the joint becomes triangular or hatchet-shaped, as in the genus *Phonoducne*. In the second larger and more highly-modified division, the TRITOMINÆ, the expansion of the sensory area has advanced to such a degree that the length of that surface is by far the largest dimension of the joint, which has become a broad boat-shaped structure, with a foot-stalk attached near the middle of its curved base. So great is the dilatation in some species of *Tritoma* and allied genera that this joint may be described as a slender transversely-fixed rod with a sensitive and an insensitive side. In correspondence with these two forms of maxillary palpus a difference of form occurs also in the labium. This consists of two parts separated by a well-marked articulation, the terminal ligula, to which the labial palpi are attached at the base and which is fringed with stiff hairs in front and generally more or less bilobed, and the basal piece or mentum, which is very thick and solid, with the median part of its outer face very prominent, forming a triangle of which the apex is in front. On each side of this triangle appears a hollow space in which the palpi lie when at rest. In the DACNINÆ the mentum is broad, the triangular surface large and obtusely pointed and the lateral hollows relatively small. In the TRITOMINÆ the mentum is narrow, an extension of the submentum, the part of the head to which it is attached at the base, encroaching upon the hinder part of the mouth. The excavated lateral part is relatively large and the apex of the triangle generally acute. Into the space between this median triangle and the lateral wall of the mouth-cavity the palpus can be withdrawn, the large and delicate sensory surface being protected in *Encaustes*, *Micrencaustes* and *Aulacochilus* by being pressed against the lateral walls, elevated in these genera into vertical ridges continuous with the lower edges of the mandibles. In the other and larger section of TRITOMINÆ, the

TRITOMINI, the lateral walls of the mouth are bent outwards and form horizontal, more or less semicircular plates, whose outer edges approach the eyes. Behind each plate is a deep recess which receives the basal part of the antenna in its resting position. In *Dacne* and allied forms these walls are produced obliquely forward on each side, and appear as pointed horn-like processes.

Thorax.—The pronotum is of simple form, without broadly raised margins or grooves at the sides and base, such as form conspicuous features in many **ENDOMYCHIDÆ**. The lateral margins are generally rather narrowly raised, and the base may be similarly raised at the sides. The basal foveæ characteristic of the **ENDOMYCHIDÆ** and most of the **LANGURIIDÆ** are absent or only occasionally represented by a minute pit on each side, as in a few species of *Eneastes*. A peculiar feature found in many, though not in all, **EROTYLIDÆ** is a small pore in each angle of the prothorax (fig. 7). It is best developed in the smaller members of the family, and seems to be always conspicuous in the great genus *Tritoma*. In any species of that genus the pores may be easily seen upon the dorsal surface.



Fig. 7.—Left lateral margin of prothorax in *Rhodotritoma*, to show angle-pores.

They occupy each of the four angles, and are surrounded by a definite ring of chitin, which gives them somewhat the appearance of spiracles. They are always situated in the raised margins, of which they occupy the extreme ends, and can be best seen when the insect is looked at in profile. The posterior pore occupies a depression in some species, so that the hind angles of the thorax have the appearance of being excised. The pores should probably be regarded as belonging, not to the pronotum, but to the now-obiterated junction between it and the episternum, and they are perhaps the orifices of secretory glands such

as exist in various other groups of beetles. In the tiny species belonging to the genus *Aphanocephalus* (family **DISCOLOMIDÆ**) lateral pores of an exactly similar character are well-developed. It is probable that prothoracic glands were of more general occurrence in the Coleoptera in earlier times than now. In peculiar members of several families (**PAUSSIDÆ**, **PSELAPHIDÆ**, **HISTERIDÆ**, **ETRONIDÆ**), agreeing only in living as guests in the nests of Ants or Termites, there are orifices on each side of the thorax, surrounded by tufts of hairs, which there is reason to suppose exude a secretion agreeable to their hosts. I have already referred to the orifices at the base of the pronotum of the **ENDOMYCHIDÆ**, which will be discussed later.

The scutellum, the exposed part of the mesonotum, varies little. It is always small and nearly always transverse, obtusely pointed behind and a little narrowed at the base. It may be almost semicircular or so much abbreviated as to become narrowly rectangular, as in *Paracoptengis*.

Elytra.—The elytra are very closely adapted to the base of the thorax, with the lateral margins of which they are generally

continuous at the sides. In *Encaustes* they are wider at the base than the base of the pronotum, leaving the shoulders very prominent, but this is exceptional. There are sharply-defined epipleuræ, wrapping round the sides of the body beneath, and the extremities are usually rounded conjointly but occasionally truncate. The surface is usually divided by longitudinal lines of punctures, almost always fine and inconspicuous and rarely occupying definite grooves or striæ.

Wings.—The wings are of the Clavicorn or Cantharoidean type—i. e., they exhibit a type of venation in common with such families as the LAMPYRIDÆ, TENEBRIONIDÆ and CUCUJIDÆ, the most conspicuous feature being the long hook-like Recurrent (or Externo-median) vein. A point overlooked hitherto is the atrophy of the wings in certain genera, notably in a group to which I have already referred as remarkable for the reduction of their eyes. In the genus *Triplatoma* the wings, although not lost, are shorter than the elytra and probably useless for flight, but in *Paracoptengis* and *Trichulus* only minute vestiges of them remain. As in many other beetles of various groups the loss of the power of flight is indicated by certain peculiarities in the outward aspect, particularly the comparative narrowness of the elytra at the base

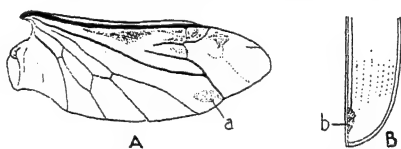


Fig. 8.—A, wing, and B, part of inner surface of the left elytron of *Encaustes gigas*, showing stridulatory areas at *a* and *b*.

and the absence of shoulder-prominences, evidently due to the atrophy of the wing-muscles. All the species of this group of genera are distinguished by their narrowness of form, especially in the anterior part of the body, the widest part being generally towards the posterior end. The antennæ are curiously variable, being sometimes very much thickened and sometimes very long and slender.

The wings of the members of this family may usually be recognised immediately by the presence of the "stridulatory patch." If a wing of one of the larger species, such as *Encaustes*, is examined, a small oval patch (fig. 8, A *a*) of a darker colour than the surrounding membrane may be seen close to its lower edge and immediately before the vein which unites the looped "recurrent" vein to that edge. This coloured patch is a stiffened portion of the membrane which under the microscope is found to be shagreened or scaly, like a shark's skin, upon its upper surface. It is so placed that it reaches the tip when the wing is folded and packed away beneath the elytra, and lies directly beneath their united inner edges at a little distance from the extremities. Examination of this part of the elytra reveals that, whereas the inner surface generally is smooth and shining, there is here a

projecting fold (fig. 8, Bb) with a dull surface, which the microscope shows to be shagreened in a rather similar way to the wing-patch. By what means the two surfaces are rubbed together it is difficult to determine, but that the apparatus serves the purpose of stridulation cannot be doubted. Probably the abdomen bears an important part in the operation, for the wings unsupported can scarcely possess sufficient rigidity.

It is interesting to find this apparatus present in forms in which the wings have become useless for their original purpose. Amongst the Indian EROTYLIDÆ, *Triplatomia sexnotata* has the wings so much reduced that they can no longer serve for flight, but the stridulatory patch is nevertheless well-developed. Another remarkable form, *Trichulus pubescens*, found in Ceylon, has lost its wings entirely, with the exception of a very narrow strip of membrane on each side, but this strip carries at its end the hard, rough stridulatory area (see fig. 9, a) for which it quite evidently serves only as a support.



Fig. 9.—Stridulatory wing of *Trichulus pubescens*.

The wing stridulating organ is found in a similar form in the ENDOMYCHIDÆ and also, strangely enough, throughout the Water-beetles of the family DYTISCIDÆ, and has been recently described by me in the 'Transactions of the Entomological Society,' 1924, p. 134. In the latter family also a species is known, the North American *Agabus bifarius*, in which the wing is reduced to such an extent as to be useless for flight, but, as in *Trichulus*, retains the stridulatory patch in a well-developed form. Another interesting analogy is with the family PASSALIDÆ, in which a scaly patch occurs upon the lower, instead of the upper, surface of the wing, and is scraped, not by the elytra, but by a peculiarly sculptured boss on each side of the antepenultimate tergite of the abdomen. In various genera of this family, again, the wings are of no use for flight, but serve as organs of stridulation. In *Proculus*, which consists of very large Central American insects, a pair of very narrow strips of membrane are all that remain, each lying in a slight depression in the corresponding elytron, and the end of each strip is a horny drum which coincides with the stridulatory boss upon the back of the abdomen.

Abdomen.—The abdomen always consists of five visible sternites beneath, the basal one wider than the rest, though less conspicuously so than in the ENDOMYCHIDÆ, and meeting the metasternum in a nearly straight line between the hind coxæ, not articulated by an angular process, as in the LANGURIIDÆ. The third sternite is sometimes shorter than the rest, and the last is simply rounded behind and not subject to peculiar modifications according to the sex, as in the ENDOMYCHIDÆ.

The female has a long flexible protrusible ovipositor, only slightly chitinous and bearing at the extremity a pair of two-jointed tactile appendages, the tip of each formed by a single bristle

The ædeagus of the male also bears a pair of tactile appendages, but is a much more complex structure. Enclosed in successive sheaths formed from the invaginated terminal segments of the abdomen, the essential part consists of a laterally-compressed share-like median lobe, the two sides of which, united above, are joined only by a membrane beneath, and which moves backwards and forwards through a half tube, the tegmen, which bears at its anterior end the two long, jointed appendages, or lateral lobes. To the hinder end of the median lobe is attached a pair of slender struts, united anteriorly.

Sexual Differences.

These are much less developed than in the ENDOMYCHIDÆ. The two sexes are not recognisable by any constant external differences, and in most cases are quite alike. When external differences occur they are not found throughout particular genera, but usually only in certain large and vigorous species. Contrary to the general rule in insects the largest individuals are commonly males, but it is probable that small males tend to lose external sex-characters, when these are present in large specimens, and so become indistinguishable from the other sex. The association of secondary sexual characters with exceptional size is as well marked in this family as it is in the DYNASTINÆ, CETONIINÆ, COPRINÆ, and indeed most other groups of insects. Not only do the largest individuals of their species exhibit such features in more than a proportionate degree of development, but the largest species of a genus are the most likely to show sexual dimorphism, and in small species secondary sexual features may be entirely absent, although present in closely-related but larger forms.

Sex-marks of the same kind may appear in particular species of different genera not very closely related. A not uncommon mark of the male in this and other families is a small tuft of erect hairs in the middle of the basal sternite of the abdomen. This is found in various species of the typical South American genera *Erotylus* and *Morphoides*, and reappears in African species of the entirely dissimilar genus *Megalodacne* (e.g., *M. sexsignata*). In another African *Megalodacne* (*M. tricolor*, Duv.) the clypeus of the male is cleft at the middle, and this peculiarity occurs again in a New Guinea genus—*Simocoptengis*.

In one South American Erotylid (*Cytorea interpunctata*) the male bears a pair of short parallel horns upon the head. In other species closely related the head is hollowed out, but the sides of the hollow are not produced into horns. In an extraordinary West African form (*Zythonia fulva*), of which the head is very broad and flat, the sides are produced outwards in the males in such a way as to divide the eyes, placed far apart, into two halves, one above and the other beneath the head.

The antennæ do not, as in so many other groups, show any great tendency to a higher development in the males, although in rare cases they may be a little longer and in a few the club is

conspicuously larger (e. g., *Pseudodacne admirabilis*). Such sex-differences as are found are most commonly located in the legs. In numerous cases these are longer and more robust in the male, and the tarsi may be broader. It is not unusual to find rows of fine teeth placed along the inner edges of the femora and tibiæ in the same sex. This is seen at its maximum in *Encaustes*, the males of certain very large species of which (see Plate I, fig. 8) have the front legs developed as manifest grasping organs, the femur and tibia being curved in opposite directions, in such a way as to enclose a space when folded one upon the other, while the inner edge of the tibia bears a series of strong teeth projecting into the hollow so formed. In the genus *Cyrtomorphus* fine teeth are found upon the middle tibiæ, and in *Phonodacne* they occur upon the hind tibiæ. In *Rhodotritoma* extremely minute teeth may be found upon the front femora.

A distinction of a very different kind is found in the elytra of a few species of *Neotriplax* (although not in the Indian *N. rubens*, Hope) and *Palæolybas*. Upon the posterior part an opaque area is found in the male—not in the female, as might be expected from the apparently analogous roughening of the elytra in females of other families (DYTISCIDÆ, RUTELINÆ, etc.). An exactly similar male distinction is found in a Tropical American genus of NITIDULIDÆ (*Pallodes*), a family not very distantly related to the present one.

Key to the Subfamilies of EROTYLIDÆ.

Club of the antenna composed of three or more joints.

Mentum strongly transverse; terminal joint of the maxillary palpus not transverse; three basal joints of the tarsus not widening from 1st to 3rd

DACNINÆ, p. 29.

Mentum not transverse; terminal joint of the maxillary palpus strongly transverse; three basal joints of the tarsus widening from 1st to 3rd

TRITOMINÆ, p. 68.

Club of the antenna solid, round

EUXESTINÆ, p. 148.

Subfamily DACNINÆ.

More or less cylindrical or oblong in shape. Legs generally moderately slender, simple. Tarsi 5-jointed, the four basal joints cylindrical and subequal, or the first three joints a little dilated and broadly fringed, but never progressively widened from 1st to 3rd, and the 4th reduced but never very minute. Antennæ generally moderately long, with a flattened, generally long and closely-articulated 3-jointed club. Sides of the mouth-cavity more or less produced forward, not vertical or horizontal. Mentum short and transverse, trapeziform, very broad at the base, hollowed on each side anteriorly, and generally sharply acuminate in the middle.

Ligula narrow, sometimes bilobed at the front margin. Labial palpi short, with the terminal joint very short and broad. Maxilla without teeth internally, the two lobes not greatly differing in shape or length. Maxillary palpi with an elongate, more or less pointed, last joint. Mandible very short and stout, shortly bifid at the tip.

To this subfamily belong those primitive forms in which a simple 5-jointed foot is found, with the 4th joint scarcely at all reduced. These are placed at the beginning of the series. At the other end is a group of peculiarly modified genera in which the wings are found in various stages of atrophy, and the base of the elytra assumes a peculiar rounded outline as a consequence.

The greater development of the 4th joint of the tarsus has been regarded as the leading feature of the group; but this is the case to a noticeable degree in only a comparatively small number of species. A more important distinctive character is the form of the three basal joints, which are either not flattened at all or only slightly, and not successively more dilated from 1st to 3rd. Sometimes broad soles to the feet are produced by thick pads of yellow hair instead of by the dilatation of the joints, but these pads are of equal breadth upon all the three joints. In conjunction with this tarsal structure a well-marked difference in the mouth-structure clearly separates the subfamily from the TRITOMINÆ. The mentum is transverse and much wider at the base than in front, the last joint of the maxillary palpus is not transverse, and the lateral walls of the mouth are not flattened either vertically or horizontally.

Key to the Genera of DACNINÆ.

- | | |
|--|----------------------------|
| 1 (6) Tarsi with four subequal cylindrical joints preceding the claw-joint. | |
| 2 (5) Tibiæ and tarsi moderately stout. | |
| 3 (4) Mesosternum exposed; eyes not very coarsely faceted..... | DACNE, Latr., p. 31. |
| 4 (3) Prosternal process covering the mesosternum; eyes very coarsely faceted..... | [p. 34. |
| 5 (2) Tibiæ and tarsi very slender | MICROSTERNUS, Lewis, |
| 6 (1) Tarsi with the 4th joint reduced. | DROMODACNE, n. gen., |
| 7 (8) Club of the antenna not longer than it is wide | [p. 35. |
| 8 (7) Club of the antenna longer than it is wide. | IDIODACNE, n. gen., p. 36. |
| 9 (14) Eyes large, not widely separated; wings well developed. | |
| 10 (11) 3rd joint of the antenna not, or scarcely, longer than the 4th.... | [p. 38. |
| 11 (10) 3rd joint of the antenna distinctly longer than the 4th. | EPISCAPHA, Lacord., |
| 12 (13) Head without stridulatory files; tarsi not very broadly fringed..... | [p. 44. |
| 13 (12) Head with stridulatory files; tarsi very broadly fringed | MEGALODACNE, Crotch, |
| | [p. 57. |
| | PHONODACNE, Arrow, |

- 14 (9) Eyes small and far apart; wings short, imperfect or absent.
 15 (18) Antennæ stout.
 16 (17) Lateral margins of the pronotum narrow [p. 59. TRIPLATOMA, Westw.,
 17 (16) Lateral margins of the pronotum wide ENDYTUS, Bedel, p. 61.
 18 (15) Antennæ slender. [p. 62.
 19 (20) Body without hair; elytra truncate. PARACOPTENGIS, Hell.,
 20 (19) Body entirely hairy; elytra not truncate TRICHULUS, Bedel, p. 65.

Genus DACNE.

Dacne, Latr., Précis Car. Ins. 1796, p. 12; id., Genera Crust. et Ins. ii, 1807, p. 20; Crotch, Trans. Amer. Ent. Soc. iv, 1873, p. 352.

Engis, Payk., Fauna Suec. iii, 1800, p. 349; Chap., Gen. Col. xii, 1876, p. 27.

TYPE, *Dermestes bipustulatus*, Thunb. (Europe).

RANGE. Europe, Asia, Africa, N. America.

Small, shortly cylindrical, compact and convex in form. Legs and antennæ not very long, the latter with a broad 3-jointed club, the 8th joint short and transverse, but not forming part of the club, the 3rd slightly elongate, the rest short and bead-like. Legs placed rather close together, the femora thick, the tibiæ moderately dilating from base to extremity, the tarsi cylindrical, 5-jointed, the four basal joints short, nearly equal in size and not at all dilated, the last joint long. Eyes small and far apart, moderately finely faceted. Pronotum broad and convex, with the anterior part prominent in the middle and excised between it and the front angles, which are prominent but not acute. The hind angles are obtuse and the base is feebly lobed in the middle. Scutellum broadly transverse. Prosternum dilated behind the front coxæ, where it forms a prominent rounded lobe; mesosternum short. Basal segment of the abdomen only a little longer than the four following ones. Genæ laterally produced on each side of the mouth as stout spine-like processes. Mentum strongly transverse. Ligula very short. Lobes of the maxilla not very short, subequal, the inner one with a sharp spine below the apex. Maxillary and labial palpi very stout and compact, with the terminal joint slightly elongate. Mandible very short and stout, with the apex minutely bifid.

This genus of Latreille's was omitted by Lacordaire from his Monograph of the EROTYLIDÆ from uncertainty as to its nearest affinities. The name *Dacne*, however, was used by him, as by other authors after Latreille, for the species now known as *Megalodacne*.

The larva of the European *Dacne rufifrons* has been figured by Westwood in his 'Modern Classification of Insects,' i, fig. 11, no. 13.

Beetles and larvæ are found in large numbers in the interior of Boleti.

Key to the Species of DACNE.

- 1 (2) Uniformly reddish; club of the antenna not very broad. *indica*, Crotch, [p. 32.
 2 (1) Decorated; club of the antenna very broad. [p. 32.
 3 (4) Club of the antenna dilating from base to apex. *optabilis*, Gorh., [p. 33.
 4 (3) Club of the antenna not dilating from base to apex *pulchella*, sp. n., [p. 33.

1. *Dacne indica*.

Thallis indica, Crotch,* Cist. Ent. i, 1876, p. 401.

Entirely testaceous or reddish yellow above and beneath, and including the legs and antennæ, with the eyes black.

Elongate-oval, convex, smooth and shining. The upper surface is strongly punctured, the head and pronotum fairly closely, the eyes separated by more than four times their radius. The pronotum is about two-thirds as long in the middle as it is wide, with the front margin gently excised on each side, the lateral margins feebly rounded, the front angles bluntly rectangular, the hind angles obtuse and the base finely margined and feebly lobed in the middle. The scutellum is short, strongly transverse and scarcely angulated behind. The elytra bear imperfect rows of punctures, large in front and fine or obsolete behind, with similar but irregular punctures between: these are rather coarse and conspicuous behind the scutellum. The lower surface is finely punctured, except at the sides of the metasternum; the prosternal process has a lateral groove on each side and the basal segment of the abdomen forms a rather strong intercoxal process. The antennæ are stout, the 3rd joint slightly elongate, the 4th a little longer than it is wide, the 5th to 8th very short and nearly equal, the 9th, 10th and 11th strongly transverse, the last larger but not wider than the preceding one.

Length, 4-5 mm.; breadth, 2-2.5 mm.

UNITED PROVINCES: W. Almora Division, Dindihat, 5000 ft. (*R. N. Parker*, July); Kumaon (*H. G. Champion*, June, Aug.); Mussoorie, Woodstock Falls (*Dr. M. Cameron*, Mar.); Simla Hills, Gahan, 7000 ft. (*S. N. Chatterjee*, Sept.).

Type in the Cambridge University Museum.

Specimens were found by Mr. Champion in a *Polyporus* growing upon a dead alder (*Alnus nepalensis*).

2. *Dacne optabilis*.

Dacne optabilis, Gorh.* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 280.

Bright yellow, with the eyes and elytra black, the latter decorated with a curvilinear orange band extending from shoulder to shoulder, shortly interrupted at the suture and not quite reaching the base or the external margin.

* As stated in the Preface, an asterisk after the name of a species indicates that a type or co-type has been examined.

Oblong in shape, highly convex and very smooth and shining. The head is irregularly and rather sparingly punctured, and the eyes are small and separated by more than four times their radius. The pronotum is about twice as broad as its length in the middle, similarly but rather more evenly punctured, with the front margin gently rounded, slightly excised behind the eyes, the lateral margins a little convergent but scarcely curved, the front angles right angles, the hind angles obtuse and the base finely margined and broadly lobed in the middle. The scutellum is strongly transverse and very obtuse at the apex. The elytra bear incomplete rows of moderately fine punctures and the intervals bear similar but irregular punctures, rendering the rows indistinct except upon the orange band, where the linear punctures are filled with black pigment. The lower surface is very finely punctured and rather sparsely, except upon the posterior part of the abdomen. The prosternal process has a marginal groove on each side, and the basal segment of the abdomen forms a narrow intercoxal process. The antennæ are very short and compact, the 3rd joint a little longer than the 2nd or 4th, the 4th to 8th progressively diminishing, and the last three very strongly transverse and progressively increasing.

Length, 3.5 mm.; *breadth*, 2 mm.

TENASSERIM: Mt. Mooleyit, 3000-5700 ft. (*L. Fea*, April).

Type in the Genoa Museum; co-types in the British Museum.

3. *Dacne pulchella*, sp. nov. (Plate I, fig. 9.)

Bright red, with the elytra black and each decorated with a transverse orange patch of roughly oval shape placed a little behind the base.

Oblong-oval, highly convex and very smooth and shining, with moderately slender legs. The upper surface is strongly and deeply punctured, the head rather closely, the pronotum a little more sparingly; the elytra irregularly, with only a trace of linear arrangement, and in the posterior part more sparsely and finely. The pronotum is broad, very convex, not distinctly narrowed in front, the anterior margin straight in the middle and deeply excised on each side, the lateral margins gently rounded, the front angles bluntly produced and the hind angles obtuse. The scutellum is sparingly but distinctly punctured. The lower surface of the body is sparsely but rather strongly punctured. The prosternum is broad, strongly rounded at the hinder edge, and the episterna are wide and hollowed. The tibiæ are rather broad at the end, and the outer angle is rounded. The antennæ are stout, the first two joints almost spherical, the 3rd twice as long as it is broad, the 4th to 7th as long as wide, the 8th very short and the last three very short and broad, the 9th and 10th similar and a little broader than the 11th, which is transversely oval.

Length, 4.5 mm.; *breadth*, 2.25 mm.

CEYLON: Dikoya, 3800-4200 ft. (*G. Lewis*, Jan., Feb.).

Type in the British Museum.

This has a close resemblance to *D. optabilis*, but is a little larger and broader, with the prothorax more convex and its sides more dilated and hollowed beneath. The pale elytral marks are rather different in shape, and the club of the antenna is very different.

Genus **MICROSTERNUS**.

Microsternus, Lewis, Ent. Month. Mag. xxiv, 1887, p. 3; id., Ann. Mag. Nat. Hist. (5) xx, 1887, p. 57.

TYPE, *Megalodacne ulkei*, Crotch (U.S. America).

RANGE. N. America, Japan, Indo-Malayan Region.

Body moderately elongate, convex and very compactly formed, with the legs rather stout, not long. The scutellum is moderately broad, obtusely angular at the apex. The elytra are very closely correlated with the base of the pronotum, and the humeral angles acutely produced forward. All the coxæ widely separated; the prosternum elevated into a broad, flat triangle, with its apex not quite reaching the anterior margin and its base forming a very broad posterior process almost completely covering the mesosternum, only the posterior edge of which at the most is exposed. Tibiæ moderately broad at the end; tarsi not long, the three basal joints with hairy soles, but not broad, the 4th joint distinct. Head short; eyes prominent, moderately large, coarsely faceted. Antennæ stout, joint 3 slightly elongate, 4 to 8 very short and bead-like, 9 to 11 rather transverse, forming a long abrupt hairy club. Mandible very short and stout, bluntly bifid at the tip. Maxilla unarmed, the lobes very short, truncate and equal, the outer one naked beneath, the palpus compact, with the last joint elongate and fusiform. Mentum strongly transverse. Ligula narrow, short, not lobed; palpi short, the last joint pear-shaped.

4. *Microsternus cribricollis*.

Dacne cribricollis, Gorh.,* Ann. Soc. Ent. Belg. xxxix, 1895, p. 324; id., Ann. Mus. Civ. Genova, xxxix, 1896, p. 280.

Episcaphula lepida, Kuhnt,* Deutsche Ent. Zeitschr. 1910, p. 222 (new syn.).

Black and shining, each elytron decorated with two bright orange transverse patches, the first placed at the anterior margin and not quite reaching the lateral margins, excised at the humeral angle and minutely toothed at its hinder edge, the second beyond the middle, irregularly oval in shape and reaching the inner margin.

Elongate-oval and very convex, smooth and hairless above and beneath. The head is coarsely punctured, the eyes separated by more than twice their diameter. The pronotum is also strongly and evenly punctured, the punctures becoming progressively larger from before backwards, but with the basal lobe smooth;

the sides are nearly straight, slightly converging forwards, very narrowly margined, and all the angles are nearly right angles. The elytra are more finely punctured in rows, with irregular scattered punctures in the intervals. The prosternum and metasternum are very sparsely punctured, the former very finely margined at the sides, and the abdomen is more strongly and closely punctured beneath.

Length, 5-6 mm.; *breadth*, 2-3 mm.

BOMBAY: Belgaum (*H. E. Andrewes*). S. INDIA: Nilgiri Hills (*H. L. Andrewes*), Anshi (Jan.), Agsur (Feb.).

Taken from fungus on dry wood.

Type in the British Museum; also that of *E. lepida*, Kuhnt.

Gorham has recorded this species from Pegu, but the specimen referred to has a shorter antennal club and must be regarded as distinct.

Genus **DROMODACNE**, nov.

TYPE, *D. vivax*, sp. nov.

Range. W. Himalayas.

Oblong-ovate, convex, with very long and slender legs. Head large. Eyes not large, finely faceted, oblique, not at all prominent, the head not narrowed behind the eyes. Pronotum convex, narrowed in front, with the anterior margin gently excised on each side behind the eyes. Scutellum transversely oblong, not angular. Sides of mouth-cavity not spinose, forming rounded bosses. Mentum semicircular. All the palpi elongate, with fusiform terminal joints. Antennæ not long, the basal joint stout, 2nd rather large, oval, 3rd twice as long as the next, 4th to 7th short, 8th very short, the last three strongly transverse and forming a very large compact club. Prosternum broad between the coxæ, dilated behind and broadly rounded. Mesosternum short. Coxæ rather large; femora long and scarcely thickened; tibiæ very long and slender, feebly curved at the base; tarsi 5-jointed, slender and simple, not flattened beneath nor closely hairy, the 4th joint as long as, but a very little narrower than, any of the three preceding it.

5. *Dromodacne vivax*, sp. nov.

Orange-yellow, with the eyes, the antennal club and the elytra black.

Oblong-oval, strongly convex, smooth and shining. Head and pronotum distinctly and evenly, but rather sparsely, punctured. Pronotum strongly convex, depressed near the front angles, the front margin prominent and nearly straight in the middle, the sides feebly rounded, the front angles acute, the hind angles obtuse, and the base trisinate and finely margined on each side. Scutellum smooth. Elytra strongly but not closely punctured in longitudinal rows, which only become

disrupted near the apices. Prosternum not elevated nor margined in front of the coxæ. Mesosternum and metasternum rather strongly punctured, the mesosternum rather closely. Abdomen more finely punctured beneath.

Length, 3.5 mm.; *breadth*, 1.5 mm.

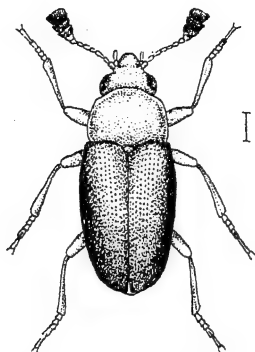


Fig. 10.—*Dromodacne vivax*.

UNITED PROVINCES: Pindar Valley, Almora, 8000–11,000 ft. (*H. G. Champion*, July).

Type in the British Museum.

Only a single specimen of this peculiar little species has been found. It is evident from the slenderness and delicacy of its legs that it possesses an unusual degree of agility for a member of the present group.

Genus **IDIODACNE**, nov.

TYPE, *Amblyopus hæmorrhous*, Gorb.

Range. Southern India.

Minute, oblong in shape, with short legs and antennæ. Femora moderately thick. Tibiæ dilating from base to extremity, where they are broad and truncate. Tarsi with the three basal joints equal, subcylindrical, but flattened and hairy beneath, the 4th joint much smaller, simple, the 5th long. Antennæ with the 1st joint large, 2nd globular, 3rd slender and rather elongate, 4th to 7th very minute, short and compact, 8th a little wider, 9th to 11th extremely short and broad, nearly equal, forming a compact flattened club about as broad as it is long. Eyes moderately large and coarsely faceted. Clypeus extremely short, emarginate in front. Labrum exposed, rather long, feebly emarginate in front. Mandible short, bent at right angles and cleft at the extremity into two acute, nearly equal, teeth. Lobes of the maxilla very short, the outer lobe broadly truncate at the end, scarcely longer than the inner; palpus stout, with the terminal joint oval and about as long as the three basal ones.

Mentum transverse; ligula oblong, a little longer than broad; palpi contiguous, the last joint shortly oval.

This new genus is formed for a single species, which resembles *Petaloscelis*, a genus belonging to the TRITOMINÆ. Its anatomical features are peculiar and to some extent intermediate between those of the TRITOMINÆ and DACNINÆ. The tarsi have the 4th joint greatly reduced, as in the former, but the three basal joints are equal, not progressively widened, and the 3rd does not form a broad lobe underlying the 4th and 5th. The elongate last joint of the maxillary palpus indicates at a glance that the position assigned by Gorham to the only known species of the genus is quite incorrect. Having placed it in the genus *Amblyopus*, Gorham afterwards found himself unable to distinguish from it an African species of that genus with a rather deceptive resemblance but a totally different structure.

6. *Idiodacne hæmorrhœa*.

Amblyopus hæmorrhœus, Gorh., * Ann. Soc. Ent. Belg. xxxix, 1895, p. 326 (not *A. hæmorrhœus*, id., Ann. Mag. Nat. Hist. (7) v, 1900, p. 90).

Bright red or orange, with the eyes and the elytra black, the latter with a small rectangular or elongate basal red patch upon

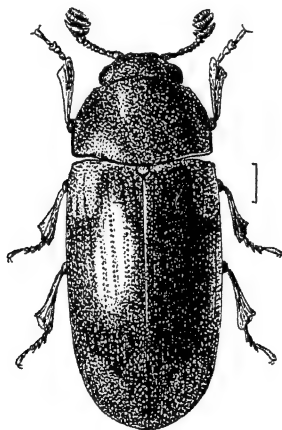


Fig. 11.—*Idiodacne hæmorrhœa*.

each shoulder, touching the basal and lateral margins and united by the red epipleuræ, with a triangular patch occupying the apical angle, but not touching the suture.

Oblong, moderately convex and smooth and shining. The head and pronotum are rather closely and uniformly punctured, with the eyes moderately large and coarsely faceted, separated

by a space about three times as wide as their radius. The pronotum is nearly twice as wide as it is long, with the front margin nearly straight and not at all excised, the lateral margins feebly curved, all the angles rather obtuse and the base finely margined and gently trisinate, with a strongly punctured, slight, transverse depression on each side. The scutellum is minutely punctured, obtusely angular behind and not very strongly transverse. The elytra are deeply striated, with the striæ strongly and closely punctured and the intervals minutely and fairly closely punctured. The club of the antenna is rather broader than it is long, and the three joints are of nearly equal size. The lower surface and legs are clothed with fine yellowish decumbent hairs or setæ. The prosternal process is dilated and feebly emarginate behind, the mesosternum moderately long, the metasternum rather sparingly punctured and the abdomen closely, the basal segment forming a narrow intercoxal process.

Length, 4–4.5 mm.; *breadth* 1.5–2 mm.

MADRAS: Chipurupalle, Vizagapatam District (*R. S. Putuck*).

S. INDIA: Madura (*H. E. Andrewes*). BOMBAY: Surat (*H. Maxwell Lefroy*, Aug.).

Type in the British Museum.

Kuhnt's Catalogue, following Gorham, has given an erroneous reference to the original description and assigned the locality "Natal." The African insect is *Petaloscelis kelleni*, under which name it had already been described by Gorham himself. It is a broader species than ours, with shorter and stouter tibiæ, less shining surface and stronger puncturation.

Genus **EPISCAPHA**.

Episcapha, Lacord., Mon. Erotyl. 1842, p. 48; Chap., Gen. Col. xii, 1876, p. 22; Crotch, Cist. Ent. i, 1876, p. 407.

TYPE, *Engis quadrimacula*, Wied.

Range. Indo-Malayan Region, China, Japan.

Oblong in shape, generally clothed with very fine velvety pubescence. Legs simple, the tarsi with the three basal joints not very broad, the fourth small, but distinct. Antennæ with joints 3 to 8 differing little in length, the 3rd not, or scarcely, longer than the 4th, the last three joints forming a rather long and closely articulated club. Eyes large and coarsely faceted. Genæ produced forward a little, but not flattened nor carinate. Mandible very short and stout, with two sharp equal teeth at the tip. Maxilla without teeth, the lobes stout and subequal, the palpus with an elongate fusiform last joint. Mentum strongly transverse; ligula narrow, bilobed in front; palpi very short, with the last joint transversely oval. Prosternum not very broad between the front coxæ, without lateral carinæ in front, and nearly straight at the posterior margin. Mesosternum about as long as it is broad. Metasternum and abdomen without coxal lines.

Key to the Species of EPISCAPHA.

- 1 (8) Upper surface closely hairy.
 2 (5) Pale patches of the elytra broad.
 3 (4) Pale patches of the elytra not rounded; hairy clothing not erect *quadrimacula*, Wied., p. 39.
 4 (3) Pale patches of the elytra rounded; hairy clothing erect above *xanthopustulata*, Gorh., p. 41.
 5 (2) Pale marks on the elytra narrow.
 6 (7) Pronotum very short, with the front angles far apart *septrionis*, Hell., p. 41.
 7 (6) Pronotum longer, with the sides contracted in front *tuberculicollis*, Gorh., p. 42.
 8 (1) Upper surface devoid of hair .. *indica*, Crotch, p. 43.

In Kuhnt's Catalogue of the Family the habitat "Himalaya" is attributed to the Chinese *E. fortunei*, Crotch, but this is probably an error.

7. *Episcapha quadrimacula*.

Engis quadrimacula, Wied., Zool. Mag. ii, 1, 1823, p. 132.

Dacne quadrimacula, MacL., Annul. Jav. 1825, p. 41.

Episcapha quadrimacula, Lacord., Mon. Erotyl. 1842, p. 53; Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 67, pl. i, fig. 24.

Black, each elytron decorated with two transverse orange

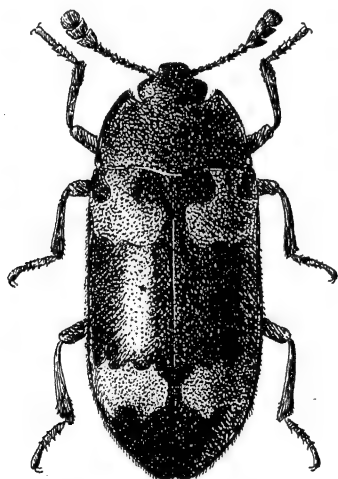


Fig. 12.—*Episcapha quadrimacula*.

bands extending almost to the inner and outer margins, the anterior band immediately behind the shoulder and sending a median branch to the base, the second behind the middle and

suboval in shape but a little emarginate behind, and both bands rather irregular in outline.

Elongate-oval in shape, not very shining above and clothed with a very fine close pubescence. The head is strongly punctured and rather shining, with very scanty pubescence. The pronotum is finely and densely punctured, with the lateral margins gently curved and converging to the front, the front angles acutely produced, the hind angles rather sharp and the base gently lobed in the middle. There is a pore at each extremity of the lateral margin. The scutellum is broadly transverse and not angulated behind. The elytra are everywhere finely and densely punctured, without any trace of linear puncturation. The lower surface is rather shining, but finely punctured and very minutely setose everywhere. The antennæ are short, with the club rather large.

The two sexes are identical externally.

Length, 9-14 mm.; *breadth*, 4-7 mm.

CEYLON: Ratnapura (May), Digadeniya (Feb.), Katupota (Feb.), Colombo, Kalupahani, Kandy, 1500-1700 ft. (*G. Lewis*, Feb.). S. INDIA: Nilgiri Hills (*H. L. Andrewes*). UNITED PROVINCES: W. Almora, Kumaon (*H. G. Champion*, Jan.). ASSAM: Garo Hills, 1200-1500 ft. (*S. Kemp*, June, July); Sylhet, Chandkhira (*J. L. Sherwill*). SIKKIM: Mungphu (*E. T. Atkinson*); Gopaldhara (*H. Stevens*). BENGAL: Berhampur, Murshidabad (*E. T. Atkinson*). TENASSERIM: Tavoy (*G. Q. Corbett*). INDO-CHINA. MALAY PENINSULA. PHILIPPINE ISLANDS. JAVA. BORNEO. SUMATRA.

Type in the Hamburg Museum (according to Heller).

Taken by Mr. H. G. Champion beneath the bark of *Shorea robusta*.

This is perhaps the most abundant and widely distributed of all Oriental EROTYLIDÆ and is sometimes found in very large numbers. Specimens received in spirit have the elytral patches of a beautiful red-gold colour, the brilliance of which is lost in the dried condition.

The larva and pupa of *E. quadrimacula*, found by Nietner in Ceylon under bark encrusted with fungoid growth, have been described and figured by Candèze in *Mém. Soc. Roy. Liège*, xvi, 1861, p. 395, pl. vi, fig. 4. The larva is yellowish, with two black longitudinal bands and two black exterior spots upon the pronotum, the succeeding segments each bearing a transverse row of black spines. It is elongate-oval in shape, rather broad in front and tapering behind, the extremity bearing a pair of short diverging processes. The legs are moderately long and the antennæ short and three-jointed. The pupa also is spinose and carries a pair of terminal processes, and the anterior edge of the prothorax appears to bear two pairs of strong spines.

8. *Episcapha xanthopustulata*.

Episcapha xanthopustulata, Gorh., Notes Leyd. Mus. xii, 1890, p. 47.

Black, each elytron decorated with two rather large orange patches, the first situated at the base, subquadrate in shape, but interrupted by a small black spot at the humeral angle, the second transversely oval and placed beyond the middle. There is generally also a small orange spot in the middle of the forehead.

Elongate-oval in shape and entirely clothed above and beneath with a fine and close erect yellowish pubescence. The whole surface is finely and closely punctured. The eyes are moderately large and coarsely faceted. The pronotum is strongly transverse, with the sides straight and parallel behind, gently rounded and converging in front, the front angles slightly acute, the hind angles right angles, and the base gently lobed in the middle. The scutellum is very short and transverse. The elytra bear incomplete longitudinal lines of punctures, rather larger than those with which the surface is covered. The mesosternum is small and subquadrate. The antennæ are moderately long, with joints 3 to 8 almost equal and the last three together almost as long as the preceding six.

Length, 9-13 mm.; breadth, 4.5-6.5 mm.

TENASSERIM (*Indian Mus.*). SINGAPORE. SUMATRA. NIAS I.

Type in the Leyden Museum.

This species is at first sight hardly distinguishable from *E. quadrimacula*, Wied., but the points of difference, although small, are numerous. The hairy clothing is less fine and not decumbent. The orange patches are larger and less ragged at the edges, the antennæ are longer, with a longer club, the eyes farther apart, the prothorax less narrowed in front and the elytra distinctly striated.

9. *Episcapha septentrionis*.

Episcapha quadrimacula, subsp. *septentrionis*, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 68, pl. i, fig. 29.

Black, with each elytron decorated with two narrow transverse orange bars, the first placed behind the shoulder and sending a narrow branch from its middle to the basal margin, the second placed beyond the middle and a little arched behind.

Elongate in shape and entirely clothed above and beneath with fine and close erect pubescence. The entire surface is finely and closely punctured. The eyes are large, prominent, coarsely faceted and separated by an interval equal to their combined radius. The pronotum is short and broad, with its sides strongly rounded, a little contracted in front and behind, the front angles slightly produced, but far apart and not acute, the hind angles bluntly rectangular. The scutellum is very short and broad. The elytra bear inconspicuous longitudinal rows of fine detached punctures. The mesosternum is transverse. The antenna is

Genus **MEGALODACNE**.

Megalodacne, Crotch, Trans. Amer. Ent. Soc. 1873, p. 352; id., Cist. Ent. i, 1876, p. 141; Arrow, Ann. Mag. Nat. Hist. (8) xx, 1917, p. 138.

Episcaphula, Crotch, Cist. Ent. i, 1876, p. 409. (Type, *amboinensis*, Crotch.)

Subg. *Oretylus*, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 56. (Type, *M. hislopi*, Crotch.)

Subg. *Lanugodacne*, Heller, op. cit. p. 57. (Type, *trifasciata*, Hell.)
Dacne, Lacord. (nec Latr.), Mon. Erotyl. 1842, p. 63.

TYPE, *Ips fasciata*, Fab. (North and Central America).

Range. Tropical America, Oceania, Australia, Asia and Africa.

Oblong or narrowly elongate in shape, generally smooth and shining. Legs fairly slender, the tarsi with the three basal joints not very broad nor progressively widened, and the 4th small but distinct. Antennæ with the 3rd joint distinctly longer than the 4th. Genæ more or less produced forward, not carinate nor flattened. In all other respects the genus agrees with *Episcapha*, from which it is distinguished only by the elongate 3rd joint of the antennæ. Dr. Heller (Arch. f. Nat. lxxxiv, 1920, p. 52) has announced as a supplementary character the comparative length of "Hornzunge" and "Nebenzunge," by which unexplained terms it is intended to convey that the sides of the mouth-cavity are not, or scarcely, produced in front of the apex of the mentum in *Episcapha*, whereas in *Megalodacne* they are distinctly longer. But there is no exact correlation between this feature and the relative length of the 3rd and 4th antennal joints, the sole criterion originally fixed upon, and Heller's character seems to me to have little value.

Lacordaire transferred to this genus the name *Dacne*, given to entirely different insects by Latreille, on the ground that the later name *Engis* had come into general use for the latter. This transfer being inadmissible, Crotch introduced *Megalodacne* for the second *Dacne*. Lacordaire distinguished his genus from *Episcapha* by the differently-shaped maxillary palpi, but noticed as an exception in this respect *M. fasciata*, F. (which Crotch selected as the type of *Megalodacne*), remarking that it was notwithstanding impossible to separate it generically from those he associated with it. Crotch separated by the name *Episcaphula* the species of Lacordaire's *Episcapha* most closely related to *Megalodacne*, and I am unable to find any significant feature by which they can be distinguished from the latter.

This genus contains a very large number of species, within our region and without, differing greatly in size, shape, puncturation, etc., but the greater number having an almost identical pattern, consisting of an anterior and posterior orange patch upon each elytron.

Key to the Species of MEGALODACNE.

- 1 (28) Elytra decorated with orange or red markings.
- 2 (7) Lateral margins of the pronotum not very fine; larger species.
- 3 (4) Pronotum closely and evenly punctured; club of the antenna large. *facilis*, sp. n., p. 45.
- 4 (3) Pronotum very unevenly punctured; club of the antenna not large.
- 5 (6) Pronotum a little contracted at the base *promensis*, sp. n., p. 46.
- 6 (5) Pronotum not contracted at the base. *marginata*, sp. n., p. 47.
- (2) Lateral margins of the pronotum very fine; smaller species.
- (27) Not pubescent above.
- (10) Club of the antenna large and compact *difficilis*, Gorh., p. 47.
- 10 (9) Club of the antenna loose, not large.
- 11 (16) Pronotum not strongly transverse.
- 12 (13) Elytra short *brevipennis*, sp. n., p. 48.
- 13 (12) Elytra long.
- 14 (15) Humeral angles of the elytra black. *vitalisi*, Arrow, p. 49.
- 15 (14) Humeral angles of the elytra red .. *tonkinensis*, Hell., p. 50.
- 16 (11) Pronotum strongly transverse.
- 17 (18) Base of the pronotum without marginal line at the side [p. 50.
- 18 (17) Base of the pronotum margined at the side. *andamanensis*, Gorh.,
- 19 (24) Pronotum strongly punctured.
- 20 (21) Antennæ very short, club rather long *brachycera*, sp. n., p. 51.
- 21 (20) Antennæ slender, club not long.
- 22 (23) Body closely punctured beneath; humeral angle orange *singhalensis*, Csiki, p. 52.
- 23 (22) Body sparsely punctured beneath; humeral angle black *consimilis*, sp. n., p. 53.
- 24 (19) Pronotum more finely, sparingly and evenly punctured.
- 25 (26) Entirely black beneath *lævis*, sp. n., p. 54.
- 26 (25) Partly red beneath *felix*, sp. n., p. 54.
- 27 (8) Upper surface pubescent *pubescens*, Hell., p. 55.
- 28 (1) Uniformly black or brown.
- 29 (30) Sooty black; elytra not sulcate *hislopi*, Crotch, p. 56.
- 30 (29) Dark brown; elytra sulcate *servilis*, sp. n., p. 57.

12. *Megalodacne facilis*, sp. nov.

Black, not very shining, each elytron decorated with two transverse red bars, the first placed behind the shoulder, reaching the outer but not the inner margin and united with the base by a branch which occupies the fifth dorsal interval, the second placed before the apex, nearly straight and not quite reaching the inner or outer margin.

Elongate-oval, not very convex, with fairly short legs and antennæ. The club of the latter is broad and compact and a little

longer than the five preceding joints together, the 3rd joint one and a half times as long as the 4th. The head and pronotum are strongly and rather evenly punctured, the latter a little more finely in the middle, and the eyes are separated by about three times their radius. The pronotum is nearly twice as broad as it is long, the sides are gently rounded, the lateral margins narrow, the front angles a little produced, but not acute, and the hind angles rectangular. The elytra bear longitudinal rows of fine punctures, with rather finer irregular punctures in the intervals. The prosternum and metasternum are sparsely punctured, the punctures larger at the sides than in the middle, and the abdomen is pubescent, densely and finely punctured in the middle and rather less so at the sides.

Length, 10.5–11.5 mm.; *breadth*, 4.5–5 mm.

BURMA: Maymyo (*H. L. Andrewes*, May).

Type in the British Museum.

13. *Megalodacne promensis*, sp. nov.

Black and shining, each elytron decorated with two bright orange patches, the anterior one a little beyond the base, reaching the outer but not the inner margin, sending a branch to the base just within the shoulder, and with three sharp teeth at its posterior margin, the posterior one subapical, broad but transverse, with four anterior and three posterior teeth.

Moderately elongate and convex, with rather stout legs and broadly fringed tarsi. The head is finely and sparingly punctured, except upon the clypeus, and the eyes are large and prominent, separated by about twice their radius. The pronotum is very finely and sparsely punctured, with a conspicuous band of coarse irregular punctures on each side, extending from the front to the hind margin, the punctures largest near the margins; its sides are strongly rounded, strongly contracted in front and slightly behind, the margins conspicuously elevated and not very narrow, the front angles acute, the hind angles almost rectangular and the base not margined. The elytra bear distinct rows of fine and not close punctures, and the intervals are extremely finely and sparsely punctured. The prosternum is transversely wrinkled, the mesosternum is longitudinally impressed on each side, the metasternum very finely and sparingly punctured and the abdomen strongly punctured at the sides and very finely in the middle. The antennæ are short and stout, the 3rd joint almost as long as the two following together, and the club oval, short and compact.

Length, 14 mm.; *breadth*, 6 mm.

BURMA: Promé.

Type in the British Museum.

The single specimen is from the collection of the late E. Y. Western.

The pattern and general aspect are those of *M. facilis*, but *M. promensis* is more shining and easily distinguished by the smooth prothorax divided longitudinally by two lines of coarse

punctures. Its margins are also more raised and the front angles more acute. This species is very closely related to the Indo-Malayan *M. elongatula*, Crotch, which is rather more elongate and less smooth and shining.

14. *Megalodacne marginata*, sp. nov.

Black and shining, each elytron decorated with two blood-red marks, the first arising at the base between the shoulder and scutellum, extending to the outer margin behind the shoulder and halfway to the suture and having four short sharp points behind, the second narrow, irregular and transverse and rather distant from the extremity.

Rather narrowly elongate and very convex. The head is fairly strongly punctured and the eyes are large and prominent, separated by barely twice their radius. The pronotum is unevenly punctured, very finely and sparingly at the sides, fairly strongly and closely in the middle, with a cluster of very large and deep punctures on each side of the base. The lateral margins are strongly elevated and not very narrow, very feebly curved, slightly converging in front, parallel behind, with the front angles acutely produced, the hind angles rectangular and the base not margined. The scutellum is not much broader than it is long. The elytra bear rows of fine, not close, punctures, which are stronger near the scutellum and disappear at the sides and apices, and the intervals are sparingly and extremely minutely punctured. The prosternum is obliquely wrinkled at the sides, the mesosternum has an almost annular impression in the middle, the metasternum is very smooth, with a few very fine punctures at the sides, and the abdomen is finely punctured beneath. The 3rd joint of the antenna is twice as long as the following one, joints 4 to 8 are slightly elongate and the club is rather small, loose and not much flattened, joints 9 and 11 rather triangular in shape.

Length, 16 mm.; *breadth*, 6 mm.

ASSAM: Cachar (*J. Wood-Mason*).

Type in the British Museum.

This is nearly related to *M. promensis*, but rather narrower in shape. The lateral margins of the thorax are strongly marked and rather straight, not rounded as in *M. promensis*. There is a very slight indication of the two lines of coarse punctures, dividing the pronotum longitudinally, which are so conspicuous in the other species.

15. *Megalodacne difficilis*.

Episcaphula difficilis, Gorb, * Proc. Zool. Soc. Lond. 1883, p. 82; id., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 279.

Black and shining, each elytron decorated with two broad transverse orange fasciæ not quite reaching the inner or outer margin, the first a little beyond the base, towards which it sends

a short median process, the second postmedian and irregularly oval in shape.

Elongate-oval, very smooth and shining, with short legs and antennæ. The club of the latter is very broad and compact and nearly as long as the preceding six joints together, the 3rd joint rather less than twice the length of the 4th. The head is strongly punctured, the eyes divided by twice the diameter of one of them. The pronotum is evenly and a little less strongly punctured, with finer punctures interspersed; the lateral margins are narrow, with a large pore at each extremity; they are gently and evenly rounded, with the front angles acute and the hind angles slightly obtuse; the base is broadly lobed in the middle. The scutellum is strongly transverse. The elytra have well-marked longitudinal rows of punctures. The tibiæ are rather stout and the tarsi are very feebly dilated. The prosternum is strongly, but not closely, punctured in the middle and coarsely pitted at the sides, the metasternum is finely and sparingly punctured and the abdomen rather closely and evenly, with the punctures larger at the sides than in the middle.

Length, 8 mm.; *breadth*, 3.5 mm.

ANDAMAN IS. TENASSERIM: Malewoon (*L. Fea*, July, Aug.).

Type in the British Museum.

***Megalodacne difficilis*, var. *dentata*, nov.**

Black, with the elytral patches distinctly transverse and strongly dentate, the anterior process of the anterior patch reaching the base of the elytron, its posterior edge and the anterior and posterior edges of the hinder patch each exhibiting four denticulations.

Length, 7.5 mm.; *breadth*, 3 mm.

BURMA: Bhamo (*L. Fea*, July).

Type in the British Museum.

Although I have seen only a single specimen of this variety (one of the numerous specimens of different species attributed by Gorham to *M. elongata*, Guér.), it is probably a local form of its species.

16. *Megalodacne brevipennis*, sp. nov.

Black and shining, with the metasternum, abdomen beneath and two broad transverse bands upon the elytra bright red, the transverse bands narrowly interrupted at the suture, the anterior one situated at the base and occupying the humeral angles, but with the inner basal angle on each side excised, the posterior band with the hind margin slightly arched on each side.

Short in form, convex, smooth and shining, with moderately slender legs and antennæ. The head is distinctly but not closely punctured, with the eyes prominent, not large, and divided by about three times their radius. The pronotum is only a little wider than it is long, very lightly and minutely punctured, with the

sides gently rounded, the front angles strongly produced but not very sharp, the hind angles bluntly rectangular, the base gently trisinate. The scutellum is very short and transverse. The elytra are only a little more than twice as long as the pronotum and bear inconspicuous lines of minute punctures, which almost disappear at the sides and apices. The sides are rather strongly curved, the breadth increasing a little from the shoulders to just before the middle, and the posterior half of the elytra tapering to a blunt point. The lower surface is rather sparingly punctured, the prosternal process and the mesosternum alone being smooth, and the metasternum has a deep curvilinear impression just behind the front margin. The antennæ are loosely articulated, the 3rd joint is only a little longer than the 4th and the last three form a loose narrow club.

Length, 6-7 mm.; *breadth*, 2.5-3 mm.

CEYLON: Dikoya, 3800-4200 ft., Bogawantalawa, 4900-5200 ft. (*G. Lewis*, Dec. to Mar.); Nuwara Eliya (April, Colombo Museum).

Type in the British Museum.

17. *Megalodacne vitalisi*.

Megalodacne vitalisi, Arrow,* Trans. Ent. Soc. Lond. 1921 (1922), p. 287.

Black and moderately shining, the elytra ornamented with two red fasciæ rather remote from one another, the anterior one extending in an oblique curve from the outer margin to near the suture, reaching the base just within the humeral angle, which is black, and having a slight posterior tooth, the posterior fascia scarcely interrupted at the suture, arched behind and produced in front into three points upon each elytron.

Narrowly elongate, tapering in front and behind, smooth and convex, with the head strongly punctured, the clypeus narrow, the eyes very prominent and coarsely granulated. The pronotum is only a little broader than it is long, rather strongly and evenly punctured, the sides gently curved in front, nearly straight and parallel behind, the front angles acutely produced, the hind angles rectangular, the base a little flattened and lobed in the middle. The scutellum is broadly transverse, smooth and shining. The elytra are finely seriate-punctate, with the intervals minutely punctured. The prosternum is strongly and not closely punctured, the metasternum almost smooth in the middle, sparsely punctured at the sides. The antennæ are slender, extending backwards beyond the base of the pronotum, with the third joint slightly longer than the fourth and the club composed of three transverse, very loosely articulated, joints.

Length, 6.5-9 mm.; *breadth*, 2.5-3.5 mm.

SIKKIM: Rungbong Valley, Gopaldhara (*H. Stevens*); Mungphu (*E. T. Atkinson*); Kalimpong, Darjeeling (*F. H. Gravely*, April,

May); Sureil, 5000 ft. (*S. W. Kemp*, April, May). **TONKIN. ANNAM.**

Type in the British Museum.

It is very closely related to *M. elongata* Guér., from Java, but of narrower form, more convex and less shining.

18. *Megalodacne tonkinensis*.

Episcaphula tonkinensis, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 83.

Episcaphula tonkinensis, var. *fratria*, Heller, l. c.

Megalodacne major, Arrow,* Trans. Ent. Soc. Lond. 1921 (1922), p. 288 (new syn.).

Black, not very shining, but the elytra rather more so, and each decorated with two transverse red or orange bars, the first extending obliquely from the shoulder to near the suture and reaching the lateral margin, touching the base at two points and emitting three sharp lobes behind, the second a little before the extremity, giving off three angular processes in front and two behind.

Elongate-oval, highly convex, with the elytra tapering from base to apex. Head moderately strongly and closely punctured, with the clypeus long and tapering and the eyes coarsely faceted. Pronotum not much broader than it is long, rather opaque, finely and rather sparingly punctured, with a few large punctures near the base on each side, the lateral margins gently rounded, strongly convergent in front, the front angles acutely produced, the hind angles rectangular, the base transversely sulcate and finely margined on each side. Scutellum broadly transverse and shining. Elytra finely seriate-punctate, with the intervals extremely minutely and sparsely punctured. Lower surface shining, with the sides of the prosternum strongly punctured, the metasternum scarcely, and the abdomen scantily, punctured. Antennæ not very long, joints 3 to 8 elongate, 9 and 10 twice as broad as long, 11 transverse, the last three very loosely articulated.

Length, 8.5–11 mm.; *breadth*, 3.5–4.5 mm.

SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*); Tonglu, Nepal-Sikkim Frontier, 10,074 ft. (*H. Stevens*, July, Aug.).

BURMA: Karen Hills, 4000–4200 ft. (*L. Fea*, May); Ruby Mines (*W. Doherty*); Pumpa-taung, 3600 ft. (*C. W. Beebe*, Nov.).

ASSAM: Manipur (*W. Doherty*). **INDO-CHINA.**

Type in the Dresden Museum; that of *M. major* in the British Museum.

19. *Megalodacne andamanensis*.

Episcaphula andamanensis, Gorrh.,* Notes Leyd. Mus. x, 1888 p. 141.

Megalodacne affinis, Arrow,* Trans. Ent. Soc. Lond. 1921 (1922), p. 289 (new syn.).

Black, not very shining, with the tarsi reddish and each elytron decorated with two irregular transverse orange bands, narrowly

separated from the outer and inner margins, the anterior band just behind the basal margin, to which it sends two short processes, the outer one at the shoulder, the posterior band midway between the middle and the apex, moderately broad at the outer end and narrow internally.

Rather elongate and convex. The head is rather strongly and closely punctured, with the clypeus narrow and tapering and the eyes very coarsely faceted and divided by an interval equal to twice their radius. Joints 2 to 7 of the antenna are elongate, the 3rd very slightly longer than the 4th and the three terminal joints strongly transverse and not closely articulated. The pronotum is strongly transverse and closely and evenly punctured, with the sides very finely margined; they are straight and slightly divergent behind and gently rounded in front, with the anterior angles rather bluntly prominent and the hind angles rectangular; the front margin has a well-marked sinuation on each side behind the eye, and the base is broadly lobed in the middle and not margined at the sides. The scutellum is strongly transverse. The elytra taper from before the middle to the extremity, and bear rather imperfect and irregular rows of fine punctures, with minutely punctured intervals. The basal joints of the tarsi are scarcely at all dilated and the terminal joint is rather long. The lower surface is shining and almost devoid of hair, the prothorax is coarsely punctured at the sides beneath, the metasternum sparingly but distinctly punctured and the abdomen rather strongly.

Length, 6-9.5 mm.; *breadth*, 3-4 mm.

SIKKIM: Darjeeling District, Mungphu (*E. T. Atkinson*); Pashok, 2500 ft. (*F. H. Gravely*, May, June). BENGAL: Buxar, Duars (*D. Nowrojee*, May). ANDAMAN IS. BURMA: Hmodon, 3900 ft. (*V. R. Rao*, May); Pumpa-taung, 3600 ft. (*C. W. Beebe*, Nov.); Bharno, Karen Hills, 2700-4000 ft. (*L. Fea*, Dec., Jan.). IND-CHINA.

Types of andamanensis and affinis in the British Museum.

20. *Megalodacne brachycera*, sp. nov.

Black, with each elytron decorated with two broad orange bands, the anterior one placed a little beyond the base, which it almost touches at the shoulder and again a little within it, and extending from the outer margin to near the suture, the posterior band a little before the apex, extending from the suture to near the outer margin, with its front edge toothed and its hind edge arched.

Rather long and narrow, a little depressed, smooth and moderately shining. The head and pronotum are strongly and closely punctured, a little less so in the middle of the latter, the eyes very prominent but not very large, and divided by a space about three times as wide as their radius. The pronotum is about one and a half times as wide as it is long, with the sides nearly straight and

parallel, the front angles fairly sharp, the hind angles minutely blunted and containing a rather well-developed angle-pore, the base finely margined at the sides and lobed in the middle. The scutellum is short and broad, and the elytra are everywhere finely but distinctly punctured, with not very well-defined lines of larger punctures. The prosternum is very strongly punctured, except in the middle, the metasternum is strongly punctured at the sides and finely in the middle, and the abdomen is finely and closely punctured. The antennæ are short and stout, the 3rd joint only

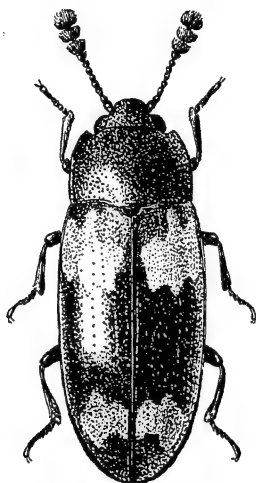


Fig. 13.—*Megalodacne brachycera*.

very little longer than the 2nd or 4th, joints 4 to 7 about as long as they are wide, 8 transverse and the last three rather large, strongly transverse but not closely united, together almost as long as the preceding six.

Length, 7-8.5 mm.; *breadth*, 3 mm.

S. INDIA: Nilgiri Hills, Auchterlony Valley, 3500 ft. (*H. L. Andrewes*, July), Anaimalai Hills, 3500-4000 ft. (*H. L. Andrewes*, May).

Type in the British Museum.

Almost identical in pattern and appearance with *M. singhalensis*, but more elongate and with much shorter antennæ.

Mr. H. L. Andrewes found numerous specimens in a decayed Pará rubber tree.

21. *Megalodacne singhalensis*.

Episcaphula singhalensis, Csiki, Termes. Füzetek, vol. xxv, 1902, p. 26.

Black and moderately shining, each elytron decorated with two broad transverse orange bars, the first extending obliquely from close to the lateral margin to near the suture, touching the base

at the humeral angle and again a little within it and abruptly narrowed in its inner half, the second, placed a little before the apex, extending almost from side to side, its front margin being feebly tridentate and its hind margin irregularly oblique. The tarsi are dark red.

Moderately elongate and convex, smooth and shining. The head and pronotum are rather strongly punctured, the latter more strongly and closely at the sides, with some very large punctures near the hind angles. The clypeus is tapering, the pronotum about half as broad again as it is long, its sides nearly parallel behind and gently rounded in front, the front angles a little produced and the hind angles obtuse, the base finely margined on each side and lobed in the middle. Scutellum very short and broad. Elytra finely seriate-punctate, with the intervals extremely finely and sparsely punctured. Lower surface shining, with the sides clothed with minute grey setæ. Prothorax coarsely and closely punctured on each side beneath, metasternum finely, and abdomen beneath finely and densely, punctured. Antennæ not very long, joints 3 to 8 elongate, the 3rd a little longer than the following ones, 9 to 11 loosely articulated, strongly transverse.

Length, 6–8 mm.; *breadth*, 2.5–3 mm.

CENTRAL PROVINCES: Nagpur (*E. A. D'Abreu*, June). UNITED PROVINCES: Dehra Dun, Thano Range (*S. N. Chatterjee*, July). CEYLON: Anuradhapura, low country (*N. Annandale*, Oct.).

Type in the Hungarian National Museum, Budapest.

22. *Megalodacne consimilis*, sp. nov.

Black and shining, each elytron decorated with two irregular transverse orange bars, the first placed behind the shoulder, almost reaching the outer margin, but more distant from the inner, and sending a short branch to the base, the second placed just before the extremity, reaching almost from side to side and a little produced forward in the middle. The abdomen beneath, the tarsi and the base of the antennæ are dark red.

Oblong-oval, moderately convex. The head and pronotum are evenly and rather strongly punctured, the eyes prominent and divided by about three times their radius, the pronotum strongly transverse. The lateral margins of the pronotum are very fine, rounded in front, straight and parallel behind, the front angles are rather sharp, the hind angles blunt, and the base is finely margined except in the middle. The scutellum is very short and broad. The elytra are moderately convex and bear lines of fine, not very close, punctures, with the intervals extremely minutely and scantily punctured. The prosternum is finely and scantily punctured in the middle and coarsely at the sides. The mesosternum is very sparingly punctured, with a few of the punctures large at the sides, and the abdomen is finely and not closely punctured. Joints 2 to 8 of the antenna are a little elongate, the 3rd one and a half times as long as those adjoining, and the

last three form a very loosely-articulated club, the 9th not strongly transverse.

Length, 5 mm.; *breadth*, 2 mm.

UNITED PROVINCES: Kumaon, W. Almora (*H. G. Champion*, Nov.).

Type in the British Museum.

The type is a unique specimen presented by Mr. Champion. This species is related very closely to *M. singhalensis*, but it is a little smaller and more shining, the lower surface is less closely punctured, the abdomen red and the antennæ a little more slender, with the 9th joint less short.

23. *Megalodacne lævis*, sp. nov.

Black and very shining, each elytron decorated with two transverse orange bars, the first forming an oblique crescent extending from the humeral angle to near the suture, with a small tooth directed backwards a little before the end, the second placed a little before the extremity, irregularly transverse and slightly emarginate at the middle of its posterior margin.

Elongate-oval, rather convex, with rather long legs and slender antennæ. The head is fairly strongly and closely punctured, the clypeus is tapering but not long, and the eyes are prominent. The pronotum is not quite half as wide again as it is long, rather evenly but not strongly or closely punctured, the sides are evenly rounded and a little contracted at the base, the front angles sharp, the hind angles very blunt and the base finely margined, except in the middle. The scutellum is very short and broad. The elytra bear lines of very fine and not close punctures, with extremely minute and scanty punctures in the intervals. The sides are curved and the width is distinctly greater near the middle than at the shoulders. The prosternum is rather strongly and sparingly punctured, the metasternum and abdomen very finely in the middle and more strongly at the sides. Joints 3 to 7 of the antenna are rather long, 8 triangular and the last three strongly transverse and loosely articulated.

Length, 7 mm.; *breadth*, 3 mm.

SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*).

Type in the British Museum.

A single specimen was found and presented by Mr. Stevens.

M. lævis has a close resemblance to both *M. felix* and *M. singhalensis*. It is rather more oval and less oblong in shape, the antennæ are more slender, the sides of the pronotum much less closely punctured than those of the latter species, and the orange bars are less broad than those of the former.

24. *Megalodacne felix*, sp. nov.

Black, shining, with the lower surface (except the side-pieces of the sternum), the tarsi and the 2nd joint of the antennæ red, each elytron decorated with two large bright orange patches, the first placed at the outer margin and occupying the humeral angle,

quadrate in shape, but with its inner anterior angle squarely excised, the second placed a little before the apex, broadly oval in shape.

Elongate-oval, very convex, not very slender, with moderately long antennæ and legs. The head is strongly but sparingly punctured and the pronotum finely and deeply but not closely, the eyes very prominent, divided by about three times their radius, and the clypeus tapering, but not long. The pronotum is about one and a half times as wide as it is long, with its sides gently and uniformly rounded, converging from a little before the base to the front angles, which are produced, the hind angles a little obtuse; the base is finely margined and has a very feeble median lobe. The scutellum is very short and broad. The elytra are convex, not long, rounded at the sides, broadest a little before the middle and distinctly tapering from there to the extremity; they bear longitudinal series of fine, not very close-set, punctures, and the intervals are very minutely and sparingly punctured. The prosternum is rather strongly punctured, the metasternum finely and sparsely and the abdomen moderately closely, except at the base. The 3rd joint of the antenna is twice as long as the 2nd, joints 4 to 7 are elongate, 8 as long as it is broad and the last three very loosely articulated, transverse and not large.

Length, 5-6.5 mm.; *breadth*, 2-2.5 mm.

CEYLON: Bogawantalawa, 4900-5200 ft. (*G. Lewis*, Feb., March); Dikoya, 3800-4200 ft. (*G. Lewis*, Dec., Jan.).

Type in the British Museum.

25. *Megalodacne pubescens*.

Episcaphula pubescens, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 109 (subg. *Lanugodacne*).

Black, not shining, finely and densely punctured and entirely clothed, above and beneath, with very minute grey setæ, the tarsi, the abdomen, except at the base, and two broad patches upon each elytron extending almost from the outer margin to near the suture, red, the anterior patch abruptly narrowed in its inner half, touching the base at the humeral angle and again a little within it, the posterior one placed just before the apex and roundish in shape. The tarsi, the antennæ, and sometimes the tibiæ, are dark red.

Elongate-oval in shape, not very convex, with short antennæ. The head and the sides of the pronotum are rather strongly punctured, the middle of the latter more finely. The pronotum is about half as wide again as it is long, the sides are nearly straight, but converge in front, the raised margins are well marked and distinctly thickened in the front and hind angles, where the angle-pores are conspicuous; the front angles are bluntly produced, the hind angles almost rectangular and the base finely margined except in the middle, where it is not very prominent. The scutellum is angular and not very broad. The

elytra are finely, evenly and rather closely punctured, without serial punctures, although these may be represented upon the red areas by longitudinal rows of black dots. The lower surface is finely and closely punctured. The 3rd joint of the antenna is as long as the two following, joints 4 to 8 are scarcely longer than wide, and the last three are short but moderately large and compact.

Length, 6.5–7.5 mm.; *breadth*, 3–3.5 mm.

CEYLON: Kandy (*G. F. Bryant*, June). S. INDIA: Madura. BOMBAY: Ahmedabad (*T. Bainbrigge Fletcher*, Aug.). SIKKIM: Kurseong (*Verschraegen*).

Type in the Dresden Museum.

Found under logs by Mr. Fletcher.

26. *Megalodacne hislopi*.

Episcaphula hislopi, Crotch,* Cist. Ent. i, 1876, p. 412.

Episcaphula scabra, Gorh.,* Ann. Soc. Ent. Belg. xxxix, 1895, p. 327 (new syn.).

Episcaphula (subg. *Oretylus*) *hislopi*, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 56.

Entirely black, opaque and sooty on the upper surface, with the exception of the scutellum, but shining beneath, with a clothing of close-lying greyish hairs upon the lower surface, which are conspicuous upon the posterior part of the abdomen but scarcely apparent elsewhere.

Elongate and rather narrow, with the entire upper surface very densely and deeply punctured. The clypeus is rounded in front and rather narrow, and the eyes are separated by more than twice their own radius. The 3rd joint of the antenna is about one and a half times as long as the 4th, and the club is short and compact, all the three joints being strongly transverse. The pronotum is about one and a half times as broad as it is long, with the sides straight and parallel behind, gently curved and convergent in front, the front angles acute, the hind angles rectangular and the base gently trisinate. The scutellum is strongly transverse, a little narrowed at the base, finely punctured and shining. The elytra are everywhere uniformly sculptured, without trace of rows of punctures, but sometimes with slight indications of longitudinal sulci; the sides are straight and parallel in front, rounded behind, and the apical angles are sharp and rectangular. The lower surface is everywhere very strongly punctured; the legs are not long and the tarsi only a little dilated.

Length, 7.5–9 mm.; *breadth*, 3–4 mm.

BURMA: Teinzo (*L. Fea*, May); Tharrawaddy (*G. Q. Corbett*). S. INDIA: Malabar, Kanara, Coimbatore. BOMBAY: Belgaum (*H. E. Andrewes*). CENTRAL PROVINCES: Nagpur (*E. A. D'Abreu*, Aug.). MADRAS: Vizagapatam Distr., Chipurupalle (*R. S. Patuck*). SIAM.

Type in the Cambridge University Museum; that of *scabra* in the British Museum.

Although closely similar, this is not identical with *M. punctatissima*, Hell., as Dr. Heller has suggested it might prove to be (Arch. f. Nat. lxxxiv, 1918 (1920), p. 107).

27. *Megalodacne servilis*, sp. nov.

Black or dark brown above and beneath, with the antennæ (except the club), the tarsi and the end of the abdomen beneath reddish-brown.

Elongate-oval, not very convex, closely punctured, scarcely shining. The head is closely punctured, with the eyes prominent and separated by twice their radius. The pronotum is strongly and closely punctured, the punctures being rather larger in a longitudinal strip at a little distance from the margin on each side, and there is a slender †-shaped smooth mark in the middle not extending to the front or hind margin. The lateral margins are gently rounded, the front angles rather sharp and the hind angles almost rectangular. The scutellum is strongly transverse and finely punctured. The elytra are lightly sulcate, with rather large and close punctures in the sulci, and the intervals are slightly rounded and rather finely and closely punctured. The lower surface is densely punctured, except at the middle of the prosternum, mesosternum and metasternum and the first ventral sternite, where the punctures are rather less close. The antennæ are short, the 3rd joint twice as long as the 2nd or 4th, the 4th to the 7th about as long as wide, the 8th a little broader than it is long, and the last three forming a compact club twice as long as it is wide. The legs are fairly slender and the tarsi narrow.

Length, 7.5 mm.; *breadth*, 3 mm.

BURMA: Pegu.

Type in the British Museum; co-type in the Budapest Museum.

Two specimens, formerly in the Bowring Collection and labelled "India," were no doubt brought from Burma. A specimen from Pegu has been submitted to me by Mr. Csiki of the Budapest Museum. The species is nearly related to *Episcaphula carinicollis*, Hell., but the smooth mark upon the pronotum is not carinate.

Genus **PHONODACNE**.

Phonodacne, Arrow, Trans. Ent. Soc. Lond. 1921 (1922), p. 285.

TYPE, *P. nitida*, Arrow (Indo-China).

Range. Southern Asia and East Africa.

Moderately elongate, smooth and shining. Head bearing a pair of stridulatory files placed upon the vertex and normally concealed entirely within the cavity of the pronotum. Clypeus rather long and narrow. Eyes moderately large, coarsely faceted. Antennæ with the 3rd joint markedly longer than the 4th, and the club

elongate and closely articulated. Mentum large, broad, obtusely angulate in front and hollowed beneath. Terminal joint of the labial palpus broadly securiform. Maxillæ unarmed, densely hairy, the inner lobe short, the outer lobe rather slender; palpus with the last joint triangular, not enlarged nor transverse. Mandible bidentate at the tip. Prosternum broadly produced behind. Legs strong, with the tibiæ rather clavate, the three basal joints of the tarsi very broadly fringed with hair and the 4th small.

♂. The front and hind tibiæ are strongly curved, and the latter may be serrate along the inner edge.

Only one Indian species is at present known. In the other species of this genus the stridulatory files are placed much farther apart than in the present instance.

28. *Phonodacne stridulans*.

Episcapha stridulans, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 278.

Black, smooth and shining, each elytron decorated with an orange lunule enclosing the shoulder, a little dilated at the basal and external margins and emitting a small tooth backwards and a horizontal lobe inwards towards the suture, and a slightly oblique postmedian fascia, not arched and emitting three anterior and four posterior teeth.

Elongate-oval in shape and moderately convex. The vertex of the head bears a pair of narrow microscopically-ridged longitudinal files, close together and parallel, considerably behind the level of the eyes (see Fig. 6, I, p. 22). The head is strongly punctured, the pronotum rather strongly and closely upon the disc, more finely at the sides, with a group of coarse punctures on each side of the base. The lateral margins are thickened, gently rounded, a little contracted in front, with the front angles acutely produced, the hind angles bluntly rectangular and the base broadly lobed in the middle. The scutellum is transverse and finely punctured, and the elytra are very finely punctured, with distinct rows of larger punctures. The outer margins are gently curved and a little flattened. The prosternum and mesosternum are rather rugose, the metasternum and abdomen finely punctured.

♂. The tibiæ are slender at the base and broader towards the extremities, the front and middle ones are curved and the hind ones serrate at the inner edge.

Length, 15.5 mm.; breadth, 7 mm.

TENASSERIM: Meetan (*L. Fea*, April).

Type in the Genoa Museum.

This species has a deceptively close resemblance to *Episcapha tuberculicollis*, Gorh., with which it is almost identical in size, shape and pattern. Only a single specimen is known.

Genus **TRIPLATOMA.**

Triplatoma, Westw., Griffith's Anim. Kingd. ii, 1832, pl. lx, f. 5 & pl. lxxv, f. 5; Lacord., Mon. Erot. 1842, p. 44; Chap., Gen. Col., xii, 1876, p. 29.

Triplotoma, Bedel, Ann. Mus. Civ. Genova, xviii, 1882, p. 435.

Nesitis, Bedel, op. cit. p. 436. (Type, *T. attenuata*, Crotch.)

Pantheropterus, Thoms., Ann. Soc. Ent. France, (3) v, 1856, p. 323. (Type, *T. macleayi*, Lacord.)

TYPE, *Engis picta*, Perty.

Range. The Indo-Malayan Region.

Elongate and very convex, with rather long legs and antennæ, the latter rather thick, the 3rd joint long, the 4th to 8th short and bead-like, the last three forming an elongate, narrow, compact club, of which the last two joints are transverse. Eyes rather small, far apart, transverse and coarsely faceted. Genæ produced forward. Mandible acutely bifid at the tip. Lobes of the maxilla rather broad, the palpus very thick, with its last joint only slightly elongate, blunt. Mentum strongly transverse, not acuminate in the middle. Ligula short, broadly bilobed. Labial palpi very stout, with the last joint transverse. Pronotum rather narrow, with narrow lateral margins, the front angles acute. Elytra closely fitting the prothorax at the base, broad, not pointed, behind. Wings imperfect. Prosternum compressed in front of the coxæ, broad behind. Mesosternum rather narrow between the coxæ. Tarsi rather long and narrow, with the 4th joint small.

Bedel has removed the following species from *Triplatoma* under the generic name *Nesitis* on account of the narrower mesosternum, but I consider that he has attached undue importance to this variable feature.

29. *Triplatoma sexnotata*.

Engis sexnotata, Wied., Zool. Mag. ii, pt. 1, 1823, p. 131.

Dacne sexnotata, MacL.,* Annul. Jav. 1825, p. 41.

Triplatoma sexnotata, Lacord., Mon. Erot. 1842, p. 46.

Triplatoma andamanensis, Gorh.,* Proc. Zool. Soc. Lond. 1883, p. 79, pl. xviii, f. 2 (new syn.).

Black, smooth and shining, decorated with a small orange mark, bifurcated behind, in each of the anterior angles of the pronotum, a transverse bar just behind the base of each elytron, denticulate in front and behind, and a similar one before the apex. These bars extend close to the outer margins, but are more distant from the inner margins.

Narrowly elongate and convex, with moderately long legs and antennæ. The head is finely and sparsely punctured and the eyes are separated by more than twice their radius. The pronotum is about as long as it is wide, very finely and sparingly punctured, with the sides narrowly margined, straight and parallel behind, gently curved and convergent in front, with the front angles acutely produced, the hind angles bluntly rectangular and the base

nearly straight. The scutellum is transverse and obtusely angular behind. The elytra bear rows of fine punctures, the shoulders are not prominent, the sides are feebly rounded, the widest part behind the middle, the extremities rounded and not tapering. The prosternum is sulcate on each side between the coxæ but not elevated, the mesosternum is very narrow, the metasternum smooth and shining, and the abdomen finely and closely punctured at the sides beneath.

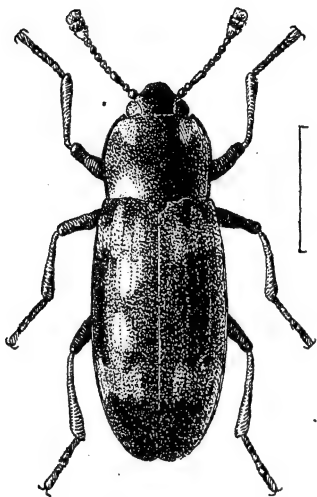


Fig. 14.—*Triplatoma sexnotata*.

♂. A little narrower in form than the female.

Length, 15–20 mm.; breadth, 5.5–8 mm.

ANDAMAN IS.: summit of Mt. Harriet, 1190 ft. (Dr. N. Annandale, Nov.). NICOBAR IS. (Roepstorff). JAVA. MALAY PENINSULA: Penang.

Type in the Hamburg Museum; that of *andamanensis* in the British Museum.

The typical Javan form of this species is generally larger, with narrower orange markings, than the form which Gorham named *T. andamanensis*, regarding it as a distinct species, but specimens practically identical with the Andaman form are to be found in Java also. The colour-difference given by Bedel as distinctive of *T. andamanensis* (Bull. Soc. Ent. France, 1920, p. 42) is erroneous.

The British Museum has received, with Mr. H. E. Andrewes's collection, specimens of another species of the genus closely related to the Bornean *T. attenuata*, Crotch, and recorded as taken flying to light in the Nilgiri Hills. As the wings are partly atrophied, as in the foregoing species, there is an evident error. The same species is certainly found at Perak and Nias Island, and its Indian origin is in my opinion very doubtful.

Genus **ENDYTUS.**

Endytus, Bedel, Ann. Mus. Civ. Genova, xviii, 1882, p. 436.

TYPE, *Triplatoma bizonata*, Crotch.

Range. The Malayan Region.

Elongate-oval, with rather slender legs and stout but rather long antennæ, the 2nd joint of the latter very short and transverse, the 3rd longer than the 4th, 4th to 7th rather short, 8th as broad as it is long, 9th to 11th strongly transverse, forming a small compact club one and a half times as long as it is wide. Eyes not large, coarsely faceted, transverse. Mandible very short and stout, bifid at the tip. Maxilla without teeth, the inner lobe rather broad, the outer lobe rather long, the last joint of the palpus elongate. Mentum strongly transverse, not acuminate in the middle; ligula broadly emarginate in front; last joint of the palpus large and transversely oblong. Pronotum rather narrow, with thick strongly elevated lateral margins and produced angles. Elytra closely adapted to the prothorax, with prominent shoulders and tapering behind. Wings perfect, but short, scarcely longer than the abdomen. Prosternum transversely elevated behind the front coxæ. Mesosternum narrow between the middle coxæ, a little hollowed anteriorly. Front tibiæ a little broader in the anterior part; middle and hind tibiæ slightly sinuous. Tarsi rather long and narrow, with the 4th joint very small.

Only one species of the genus is known.

In his diagrams representing the mesosternum of this insect and *Triplatoma cypræa*, Bedel has transposed the reference numbers, so that the references to the figures, both on the opposite page and in the text, are incorrect.

30. *Endytus bizonatus*.

Triplatoma bizonata, Crotch,* Cist. Ent. i. 1876, p. 406.

Endytus bizonatus, Bedel, Ann. Mus. Civ. Genova, xviii, 1882, p. 441, pl. x, figs. 1 & 8 (not 7).

Black, with a coppery lustre above and decorated with a vaguely-defined, more or less triangular, orange mark at the front margin of the pronotum on each side, a narrow irregular horizontal bar of the same colour, a little dilated at its inner end, upon each elytron beyond the base, and a similar but rather arched bar beyond the middle. These bars extend almost to the outer margins, but are farther from the inner margins.

Narrowly elongate, convex, very smooth and shining, with moderately slender legs and antennæ. The head is rather strongly but not closely punctured, the eyes separated by twice their radius. The pronotum is about as long as it is wide, finely and moderately closely punctured, deeply channelled on each side, leaving strongly-elevated margins, these strongly converging in

front, with acutely produced angles, and parallel or very slightly converging behind; with the angles a little produced but blunt. The base is very feebly trisinuated. The scutellum is strongly transverse and almost straight behind. The elytra bear rows of fine punctures, the shoulders are slightly prominent, the sides are parallel to the middle and gently converge from there to the extremity. The metasternum is punctured and impressed in the middle and smooth at the sides, and the abdomen is very smooth beneath, except the first and last segments, which are well punctured. The three joints of the antennal club are strongly transverse.

Length, 12-17 mm.; *breadth*, 4.5-5.5 mm.

TENASSERIM: Thagata (*L. Fea*, April). BORNEO. SUMATRA.

Type in the Cambridge University Museum of Zoology.

Genus PARACOPTENGIS.

Paracoptengis, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 54.

TYPE, *Coptengis nigrolineatus*, All.

Range. India.

Rather narrow in form, with slender legs and rather long and slightly dilated tarsi, the body without hairy clothing, but not very smooth or shining. Eyes very small and far apart, transversely oval, rather coarsely faceted, clypeus rather broad and short. Prothorax narrow, sometimes longer than wide, with rounded sides. Scutellum extremely short and broad. Wings absent. Elytra united at the suture, rather narrow at the shoulders, rounded at the sides and more or less truncate at the extremities. Prosternum broad behind; mesosternum not broad, quadrate; metasternum short. Joints 3-8 of the antenna elongate, the 3rd rather longer than the rest; club elongate, narrow or moderately broad. Mandible extremely short, minutely bidentate at the tip. Maxillæ unarmed, the lobes very broad at the end, the inner one broader than the outer; the last joint of the palpus elongate-oval. Mentum strongly transverse, rather flat, transversely impressed behind, but not carinate nor acuminate in the middle; ligula narrow, bilobed; the last joint of the labial palpi subglobose.

The male is narrower in shape than the female, with longer antennæ and the elytra less distinctly truncate behind. In his very brief formulation of the distinctive characters of *Paracoptengis*, Heller has given as its type "*lineola*, Crotch," but there is no such species and, as appears on p. 67 of his memoir quoted above, it is *Triplatomia lineata*, Gorb. (that is, *P. nigrolineata*, Allard) which he intended to designate. The most important feature of the genus, the absence of the wings, of which only minute vestiges remain, and the fusion of the elytra, have been overlooked.

Key to the Species of PARACOPTENGIS.

- 1 (2) Antennæ very slender, with the club extremely narrow *nigrolineatus*, All., p. 63.
 2 (1) Antennæ less slender, the club moderately wide.
 3 (4) Elytral costæ broadly elevated and rounded *siva*, Gorh., p. 64.
 4 (3) Elytral costæ sharply carinate *brahminicus*, Gorh., p. 65.

31. *Paracoptengis nigrolineatus*.

Coptengis nigrolineatus, Allard, Le Naturaliste, 1894, p. 26.

Triplatoma lineata, Gorh.,* Ann. Soc. Ent. Belg. 1895, p. 325 ;

Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 67 (new syn.).

Paracoptengis lineola, Heller, op. cit. p. 54.

Light brown, with darker brown markings consisting of two pairs of spots upon the head (sometimes the whole anterior part),

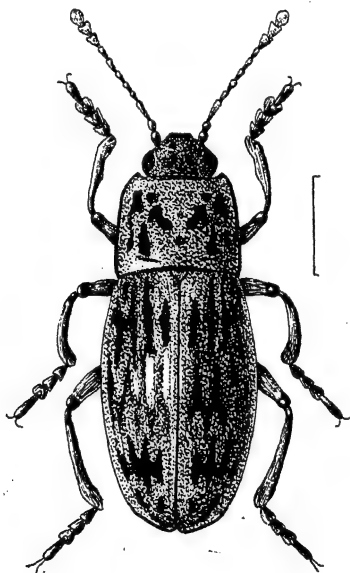


Fig. 15.—*Paracoptengis nigrolineatus*.

two pairs of elongate marks, anterior and posterior, upon each side of the pronotum, and a fine reticulation covering the elytra and consisting of four intermingled transverse ranges of zigzag lines. The antennæ, the knees, the middle of the femora, the extremities of the tibiæ and the tarsi are also of the darker shade.

Elongate in shape, smooth and hairless, but not shining above, with slender antennæ and legs. The head is finely punctured, with the eyes very small, separated by a distance four times as

wide as their own diameter. The pronotum is very minutely punctured, about as long as it is wide, with the lateral margins gently curved, the front and hind margins concave and all the angles a little produced. The scutellum is very short and broad, with its hind margin almost straight. The elytra are almost obsoletely sulcate and without distinct punctures. The humeral angles are toothed. The antennæ are very slender in both sexes, the club narrow and loosely articulated, without transverse joints. The front tibia is a little excised before the end, where it is dilated, and the middle tibia is curved. The lower surface is smooth and feebly punctured, the prosternum bilobed behind.

♂. Narrower than the female, with more convex elytra, which are scarcely truncate at the extremities. The front tarsi are very broad.

♀. The pronotum has a deep transverse impression on each side before the middle, and the margins of the impression are elevated. The elytra are relatively broader, less convex and distinctly obliquely truncate at the apices.

Length, 12-14.5 mm.; *breadth*, 5-6 mm.

S. INDIA: Madura, Shembaganur (*P. de Breuil*); Palni Hills, Kodaikanal, 6900-7200 ft. (*S. Kemp*, Aug.).

Type unknown; that of *lineata*, Gorh., in the British Museum.

"Found under rotten wood in the jungle."

32. *Paracoptengis siva*.

Triplatoma siva, Gorh.,* *Proc. Zool. Soc. Lond.* 1883, p. 79.

Black, or brownish-black, not very shining, the elytra orange-yellow, with the extreme margins, the inner basal angle, a detached spot in the humeral angle, a broad median band composed of almost longitudinal zigzag lines and a subapical patch composed of three converging lines, black.

Narrowly elongate and convex, smooth and entirely devoid of hair. The head is finely punctured, with the eyes very small and separated by a distance four times their own diameter. The pronotum is still more minutely punctured, with a satiny gloss on the disc and opaque at the sides, the base having a patch of rather coarse deep punctures on each side. The front and hind margins are concave and all the angles produced. The elytra are deeply sulcate, the sulci finely punctured, the intervals convex and the 5th and 6th sulci from the suture uniting at about three-quarters of the length of the elytra. The lower surface is very smooth and shining, the prosternum broadly bilobed behind, the mesosternum longitudinal and deeply grooved on each side. The antennæ are slender, with the club compact and fairly broad, the last two joints transverse.

♂. Much more slender than the female, with the prothorax longer than it is wide and its lateral margins almost straight. The antennæ are very slender, the front and middle tibiæ a little curved and the tarsi very broad.

♀. The prothorax is not longer than it is wide and its lateral margins are well rounded. The elytra are also more rounded at the sides, and their extremities are more distinctly truncate and a little flattened.

Length, 18–20 mm.; *breadth*, 6–7·5 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum.

33. *Paracoptengis brahminicus*.

Triplatoma brahminica, Gorh.,* *Proc. Zool. Soc. Lond.* 1883, p. 80.

Black, shining beneath and opaque above, each elytron decorated with two very narrow zigzag red bands extending from the outer margin almost to the suture, the first a little behind the base and parallel to it, the second before the apex and slightly oblique.

Narrowly elongate and very convex, entirely devoid of hair. The head and pronotum are finely and densely punctured, with the eyes small and separated by nearly four times their diameter. The pronotum is about as long as it is wide; the lateral margins are nearly straight, but a little contracted in front and behind, the base is nearly straight, the front angles a little produced and the hind angles right angles. The scutellum is shining, strongly transverse and nearly straight behind. The elytra have the sides gently and uniformly rounded, the shoulders obsolete, the greatest breadth near the middle. The inner and outer margins and eight narrow costæ are strongly elevated, the 4th, 5th, and 6th costæ coalescing in the neighbourhood of the posterior red band. The costæ are shining, the intervals opaque, and each of the latter has a single row of large punctures. The extremities of the elytra are truncate and a little flattened. The abdomen is finely and sparingly punctured beneath, the metasternum a little more strongly, with a rather deep round impression in the middle of the latter. The mesosternum is longitudinal and deeply grooved at the sides. Joints 3 to 8 of the antenna are elongate, the 3rd a little longer than the 4th, and the last three form a compact oval club, of which the two terminal joints are transverse.

Length, 21 mm.; *breadth*, 7·5 mm.

ASSAM.

Type in the British Museum.

I have seen only the type-specimen, a female.

Genus **TRICHULUS**.

Trichulus, Bedel, *Ann. Mus. Civ. Genova*, xviii, 1882, p. 438.

TYPE, *Triplatoma pubescens*, Crotch.

Range. Ceylon.

Oval in shape, rather short and convex, but with slender legs

and antennæ, the body rather closely clothed with hair, long and erect upon the upper surface. Head rather small relatively, with the eyes small, far apart and finely faceted. Antennæ slender, with the 1st joint short, the 2nd globular, the 3rd to 8th elongate, the 3rd a little longer than the rest, and the last three forming a rather narrow club, the 9th triangular and elongate, the 10th transverse and 11th almost round. Prothorax short and broad, with strongly rounded sides and produced angles, each angle with a conspicuous lateral pore, the hind angles strongly thickened. Scutellum very short. Elytra strongly convex, with rounded sides and separately rounded apices. Wings reduced to narrow vestiges. Prosternum broad between the front coxæ and emarginate at the hind margin. Mesosternum subquadrate, with its hind margin obtusely angulate. Metasternum short. First ventral segment a little longer than the second, with a rather broad intercoxal process. Middle tibiæ gently curved. Tarsi long and slender, the first three joints scarcely dilated and the 4th small, more than half as long as the 3rd and projecting considerably beyond it. Mandible stout, acutely bidentate at the tip. Inner lobe of the maxilla short and very broad, without teeth, outer lobe narrower, pointed, the palpus with a long, pointed terminal joint. Mentum strongly transverse, obtusely pointed in the middle. Ligula narrow, feebly bilobed; palpus with the terminal joint elongate-oval.

Only a single species of the genus is known. The wings (fig. 9, p. 27) of this curious insect are reduced to very narrow strips of membrane, sufficient only to carry the pigment-spots which form the posterior end of each and compose one-half of the stridulatory apparatus, the other half being situated upon the contiguous surface of the elytra. This apparatus is more fully described in the Introduction to the present family.

34. *Trichulus pubescens*.

Triplatoma pubescens, Crotch,* Cist. Ent. i, 1876, p. 406.

Trichulus pubescens, Bedel, Ann. Mus. Civ. Genova, xviii, 1882, p. 439, pl. x, fig. 2.

Dark chocolate-brown, with eleven small orange spots upon each elytron, viz. three each upon the 3rd, 5th and 9th costæ and two upon the 7th. Of the three foremost spots, two are at the basal margin (the outermost upon the humeral angle), the next four form an irregular row before the middle, and the last four an arched series at a similar distance behind it.

Elongate-oval in shape, very convex and entirely clothed with yellowish pubescence, which is erect and moderately long upon the elytra. The head and pronotum are strongly and closely punctured and fairly closely clothed with recumbent yellow pubescence, the clypeus rather narrow and gently excised at the front margin,

the eyes far apart, rather small but not very prominent. The pronotum is convex on the disc, with the lateral margins rather flattened and strongly and evenly rounded, the front margin strongly excised, the front angles acutely produced, the hind margin straight in the middle, and the hind angles produced backwards but blunt. The scutellum is broadly transverse and finely punctured. The elytra are strongly sulcate, the sulci strongly and closely punctured and giving rise to close erect hairs, the intervals smooth and shining on the summit, except those adjoining the inner and outer margins. The sides are rounded, the elytra dilating from the shoulders to the middle and

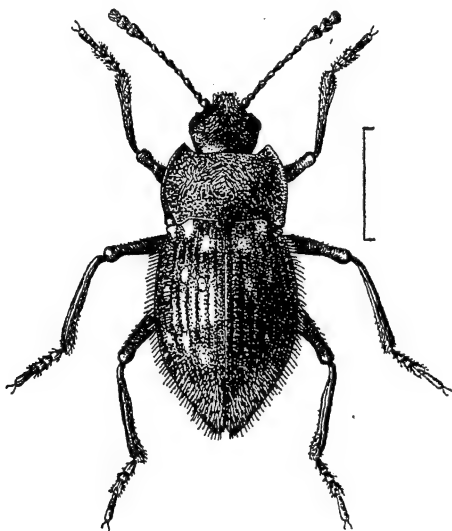


Fig. 16.—*Trichulus pubescens*.

tapering from there to the extremities, which are separately rounded. The entire lower surface is closely punctured and pubescent. The prosternum is long and the metasternum very short, with a punctiform impression near the middle of the front margin.

♂. The elytra are rather narrower and more produced at the extremities.

Length, 14–15.5 mm.; *breadth*, 6.5–7.5 mm.

CEYLON: Dikoya, 3800–4200 ft. (*G. Lewis*, Dec., Jan.).

Type in the Cambridge University Museum of Zoology.

Subfamily TRITOMINÆ.

Oblong-ovate, sometimes hemispherical in shape. Legs usually short, with the tibiæ generally dilated at the extremity, sometimes very broad, and with broadly-dilated tarsi, the three basal joints progressively widening from the 1st to the 3rd, the 4th minute, forming a knob at the base of the 5th and inserted not far from the base of the 3rd. Antennæ occasionally long, generally rather short, with the 3rd joint elongate and the club very variable, but generally not very large, usually consisting of three joints, but occasionally of four or five. Eyes large and coarsely faceted, or small and finely faceted. In many genera, but not in *Encaustes*, *Micrencaustes* or *Aulacochilus*, a pair of widely-separated stridulatory files is found in the occipital region. Genæ not produced forward, but either elevated into parallel carinæ or flattened out, forming more or less semicircular plates, between which and the eyes are deep channels for the antennæ. Mentum quadrate, sometimes elongate, never transverse, with the anterior angles deeply hollowed, leaving a triangular elevation, with its apex directed forward and acute. Ligula narrow, generally bilobed. Labial palpi generally very short, with the last joint broad and truncate. Lobes of the maxilla small and short, the inner one in *Encaustes*, *Micrencaustes* and *Aulacochilus* armed with two sharp teeth at its end, but in all other genera unarmed. Maxillary palpus with the last joint very large, transverse and broadly truncate. Mandible short, bidentate at the tip. Pronotum generally with a small but evident pore in each angle.

The leading characteristic of this subfamily is the extreme development of the sensitive surface of the maxillary palpi, which seems to indicate some peculiarity in the feeding-habits, although of what nature I am quite unable to suggest. This increased sensory surface has been obtained by the enlargement of the terminal joint transversely to the point of articulation, the truncate extremity, which provides the soft sensitive membrane and is quite small in the DACTYLIDÆ, here becoming the longest side. In some species of *Tritoma* the dilatation of this joint has gone so far that the length from the point of articulation to the truncation is only about one-fifth of the breadth. To accommodate this enlarged organ the other parts of the mouth have undergone a change of shape. The mentum is narrowed and greatly hollowed on each side, leaving a sharp dividing ridge in front. The sides of the mouth-cavity are flattened, and either spread out on each side as a semicircular lobe (*Tritoma*) or elevated into a vertical wall, against which the broad sensory face of the palpus is applied in the position of rest, and forming an evident protection for it (*Aulacochilus* etc.). In the latter group the maxillæ bear two sharp teeth. In all other EROTYLIDÆ they are unarmed.

The feet have also a characteristic form in this subfamily, being flattened, with the first three joints progressively widened and the 4th joint very minute, not nearly reaching the outer margin of the 3rd.

Divisions of the TRITOMINÆ.

- Maxillæ armed with two sharp teeth; sides of the mouth-cavity carinate..... **Encaustini**, p. 69.
 Maxillæ without teeth; sides of the mouth-cavity forming flattened lobes **Tritomini**, p. 92.

Division ENCAUSTINI.

The three genera which compose this division are peculiar to the Eastern Hemisphere and, with the exception of some species of *Aulacochilus*, consist of relatively large insects. The genus *Encaustes* contains the largest of the Old World *EROTYLIDÆ*.

As mentioned in my introductory remarks, the intimate relationship between these genera has been unfortunately overlooked by previous writers on the *EROTYLIDÆ*, who have separated them widely.

The antennæ are of rather uniform pattern, not long, but with the 3rd joint distinctly elongate, and the club small, short and oval, its last two joints very closely connected and the terminal one very small. The sides of the mouth form prominent carinæ, continuous with the mandibles, the maxillæ are each armed internally with two strong acute teeth, and the last joint of the maxillary palpi is transverse. There are no stridulatory organs upon the head and thorax, as in the *TRITOMINI*, but stridulation is effected by means of a small spinose area close to the hind margin of each wing, rubbing against a special prominence at the inner edges of the elytra (see fig. 8, p. 26).

Key to the Genera of ENCAUSTINI.

- 1 (4) Elongate; abdomen without coxal lines.
 2 (3) Without any coxal lines..... **ENCAUSTES**, Lacord., p. 69.
 3 (2) Prosternum with coxal lines.. **MICRENCAUSTES**, Crotch, p. 77.
 4 (1) Oval; all the coxæ with tangential lines **AULACOCCHILUS**, Lacord., p. 82.

Genus ENCAUSTES.

Encaustes, Lacord., Mon. Erot. 1842, p. 33; Chap., Gen. Col. xii, 1876, p. 47; Crotch, Cist. Ent. i, 1876, p. 476; Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 10.

TYPE, *Engis verticalis*, Macl. (Java).

RANGE. Tropical Asia and Africa.

Large and elongate in shape, with the pronotum distinctly narrower than the elytra across the shoulders, and the legs moderately long.

Antennæ moderately long, with a small and rather short club, the 1st joint stout, not elongate, the 2nd small and globular, the 3rd long, the 4th to 8th similar, moniliform or pear-shaped, the 9th triangular, the last two short and closely connate. Eyes not very large, but prominent, placed transversely, and very coarsely faceted. Clypeus short, nearly straight in front. Sides of the mouth-cavity forming very strong carinate ridges in continuation behind of the mandibles. Mandible very stout, with the tip short and acutely bifid. Lobes of the maxilla very short, the inner one terminating in two strong acute teeth, the outer one very broad; palpus with the last joint very strongly transverse. Mentum rather narrow, rectangular, ligula bilobed in front; palpi contiguous, stout, with the last joint not broader than long. Prosternum broad between the front coxæ, not sharply pointed in front. Middle and hind coxæ rather near together, not bordered by tangential lines. Mesosternum gently emarginate behind. First ventral segment with a narrow intercoxal process, the four succeeding ones almost equal in length. Legs fairly slender, the middle tibia generally terminating externally in a very sharp spine. Tarsi broad, the 2nd and 3rd joints transversely dilated, the 3rd larger than the 2nd, the 4th minute and inserted close to the base of the 3rd.

In the male the front legs are usually elongated, the femur and tibia being bent in opposite directions so as to enclose a space, and the inner edge of the tibia toothed in different ways, forming a gripping apparatus.

The largest known species of *EROTYLIDÆ* belong to this genus, which, although remarkable for the size of its species, is yet not distantly related to the multitudinous small forms (*Tritoma* etc.) which constitute a large proportion of the family. This relationship has been overlooked ever since Lacordaire, owing to some error in observing the teeth of the maxilla, assigned to the genus an unnatural and isolated position.

Key to the Species of ENCAUSTES.

- | | | |
|----|---|----------------------------------|
| 1 | (6) Front angles of the prothorax obliterated. | |
| 2 | (5) Elytra decorated with three transverse pale bands. | |
| 3 | (4) Basal elytral band entire at the front margin..... | <i>gigantea</i> , Boh., p. 71. |
| 4 | (3) Basal elytral band interrupted at the front margin..... | <i>malayana</i> , Guér., p. 71. |
| 5 | (2) Elytral decoration not forming transverse bands..... | <i>dispar</i> , Lacord., p. 72. |
| 6 | (1) Front angles of the prothorax distinct. | |
| 7 | (10) Pronotum red, with black spots. | |
| 8 | (9) Elytra entirely black..... | <i>birmanica</i> , Gorh., p. 73. |
| 9 | (8) Elytra decorated with red marks.. | <i>andrewesi</i> , Kuhnt, p. 74. |
| 10 | (7) Pronotum black, with red marks. | |
| 11 | (12) Elytra sulcate..... | <i>arata</i> , sp. n., p. 74. |

- 12 (11) Elytra not sulcate.
 13 (14) Elytra very finely punctured; sides
 of the pronotum feebly rounded. *cruenta*, MacL., p. 75.
 14 (13) Elytra distinctly and less finely
 punctured; sides of the pronotum
 well rounded *brevicollis*, sp. n., p. 76.

35. *Encaustes gigantea*. (Pl. I, fig. 8, ♂.)

Encaustes gigantea, Boh., Resa Eugenies, 1868, p. 211.

Black and shining, with orange markings, consisting of a longitudinal line on each side of the pronotum, extending from near the front margin to about two-thirds of its length, dilated in front and bifid behind, a patch at the base of the elytron, enclosing a black spot at the shoulder and a smaller one between it and the scutellum, a narrow, wavy transverse band at the middle and another a little broader before the apex. All three bands extend nearly to the inner and outer margins.

Elongate, rather parallel-sided, smooth and shining. The head is rather strongly punctured, with the clypeus gently emarginate in front. The pronotum is not strongly transverse, finely, sparsely and very unevenly punctured, with larger punctures near the base, its sides are nearly straight and parallel, with the front angles broadly rounded and not produced, the hind angles almost right angles, the base broadly lobed in the middle; the base and sides are finely margined, and there is a slight fovea near the base on each side. The scutellum is obtusely angular. The elytra are very minutely and sparsely punctured, the punctures showing a slight tendency to form rows. The lower surface is smooth and shining, finely and sparingly punctured. The prosternum forms a blunt rounded process in front, clothed with coarse reddish hairs. The legs are rather long, the tarsi broad, and the middle tibiæ have a slight external tooth at the extremity.

♂. The front femora are strongly curved, and the front tibiæ are clubbed at the end and have a serrate carina at the middle of the inner edge, continued by a double series of irregular teeth to the dilated extremity.

Length, 21–31 mm.; *breadth*, 8–12 mm.

SIKKIM: Darjeeling. *ASSAM*: Sylhet, Chandkhira (*J. L. Sherwill*); Garo Hills, Tura, 1500 ft. (*S. Kemp*, August). *INDO-CHINA*. *MALAY PENINSULA*.

Type in the Stockholm Museum.

36. *Encaustes malayana*.

Pselaphacus malayanus, Guér., Rev. Zool. 1841, p. 157.

Encaustes malayana, Lacord., Mon. Erot. 1842, p. 36.

Black and shining, with a broad, elongate, deep orange longitudinal bar on each side of the pronotum, extending from close to the front margin to near the hind margin, slightly narrowed in

the middle and bifid behind, and three irregular transverse bands of the same colour upon each elytron, extending almost from the inner to the outer edges, the first band reaching the basal margin at two points, the second placed in the middle and the third before the apex, the last strongly arched.

Elongate, smooth and shining, with stout legs and antennæ. The head is fairly closely punctured, with the clypeus bent downwards and excised in front. The pronotum is transverse, very finely and unevenly punctured, its sides are nearly straight and parallel, the front angles broadly rounded and not produced, the hind angles almost rectangular and the base broadly lobed in the middle; the sides and base are finely margined and there is a slight fovea near the base on each side. The elytra are very finely and irregularly punctured, with very faint indications of longitudinal lines. The lower surface is smooth and shining, finely and sparingly punctured, the prosternum forming a blunt, rounded process in front, clothed with coarse erect reddish hair. The middle tibia has a slight external tooth near the extremity.

♂. The front femur is thickened and curved, and the tibia has a slight prominence before the middle of its inner edge and between this and the clubbed extremity bears a series of blunt teeth.

Length, 19–24 mm.; *breadth*, 7–9 mm.

BURMA: Rangoon (*G. Q. Corbett*). INDO-CHINA (*R. V. de Salvaza*). MALAY PENINSULA. BORNEO.

This is generally rather smaller than *E. gigantea*, the bands are of a deeper colour, those on the thorax rather broader, and the first elytral band is interrupted at the base. The form described by Lacordaire as *E. malayana* seems to differ a little in its markings from both, and it is possible that all may ultimately be regarded as local varieties of a single species.

37. *Encaustes dispar*.

Encaustes dispar, Lacord., Mon. Erot. 1842, p. 39.

Black, with three red or orange spots between the eyes, an x-shaped mark upon each side of the pronotum, a short longitudinal line at the base of each elytron, uniting or almost uniting with an inverted lunule behind the shoulder, and a wavy transverse postmedian bar, with a slender backward extension at its inner and outer extremities.

Elongate and moderately smooth and shining, with rather stout legs and antennæ. The latter have the 3rd joint about half as long again as the 4th, and the club rather broadly oval. The head is finely punctured, and the clypeus is separated by a deeply-impressed suture. The pronotum is about a third as wide again as it is long, very finely and rather sparsely punctured, with the sides very finely margined, nearly straight and parallel behind, gently rounded in front, with the front angles completely rounded off, the hind angles slightly obtuse and the base lobed in the

middle. There is a feeble, very oblique linear fovea close to the base on each side and a fragmentary basal stria communicating with it. The scutellum is transverse, but distinctly pointed behind. The elytra are without visible punctures, the shoulders are rather prominent and the sides straight and parallel for nearly two-thirds of their length. The middle of the metasternum and the abdomen are very finely and sparingly punctured, and the former has a rather deep impression at its anterior margin. The middle tibia has a sharp spine near the end of its outer edge.

♂. The front femur is a little thickened and curved, and the tibia is a little compressed and has a fine fringe at its inner edge and a slight excision a little beyond the base.

Length, 19–22 mm.; *breadth*, 7–8 mm.

TENASSERIM: Thagata (*L. Fea*, April). MALAY PENINSULA.

JAVA. BORNEO.

? *Type* in M. René Oberthür's collection.

38. *Encaustes birmanica*.

Encaustes birmanica, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 276.

Black, with the pronotum blood-red, except the outer margin, a pair of small spots near the middle, one united with the lateral margin on each side a little before the front angle, and one united with the basal margin near each hind angle, which are black.

It is elongate in shape and very smooth but not very shining. The antennæ and legs are slender, and the terminal part of the tibiæ, as well as the sides of the tarsi, are thickly clothed with golden hair. The middle tibia has an acute spine towards the extremity of its outer margin. The 3rd to the 8th joints of the antennæ are elongate, the 3rd twice as long as the 4th. The forehead is almost smooth and the clypeus finely punctured and deeply emarginate, with its angles produced and bent downwards. The eyes are moderately large. The pronotum is smooth, with a pit at the middle of the base and a group of large punctures on each side; the lateral margins are rounded and a little contracted in front and behind, with the front angles bluntly produced and the hind angles bluntly rectangular. The scutellum is strongly transverse, but acuminate at the apex. The elytra have very fine and inconspicuous rows of punctures, the shoulders are very prominent and the sides nearly straight and parallel, except in the last third of their length, which is rounded. The prosternum is a little compressed and pointed anteriorly and, like the mesosternum, quite smooth. The metasternum and abdomen are almost imperceptibly punctured.

♂. The front femur is long and strongly curved and the tibia is slender, with a blunt internal tooth a little beyond the base and a sharp one in the middle, and from the latter to the apex it is a little curved, dilated and densely clothed beneath with golden velvety hair.

Length, 27 mm.; *breadth*, 10 mm.

BURMA: Catcin Cauri (*L. Fca*).

Type in the Genoa Museum.

By a twice repeated slip Gorham, in his description of the unique type-specimen, has located the teeth upon the front femora instead of the tibiæ.

39. *Encaustes andrewesi*.

Encaustes andrewesi, Kuhnt,* Deuts. Ent. Zeitschr. 1910, p. 224.

Black, smooth, but not very shining, with the pronotum, except its outer edge and four small black spots placed in a transverse row in front of the middle, blood-red, and a short longitudinal humeral streak at the base and a patch in the apical angle of each elytron, produced forwards near the outer margin for about a third of its length, of the same red colour.

It is elongate in shape, with moderately slender legs and antennæ. The head is finely and not closely punctured, except upon the clypeus and vertex, with large and prominent eyes. The pronotum is very finely and sparsely punctured, with a small oblique fovea near the base on each side; it is about half as broad again as it is long; the lateral margins are narrowly thickened, straight and parallel behind, gently rounded in front, with the anterior angles produced and rather sharp, the posterior angles rectangular and the base broadly lobed in the middle. The scutellum is minutely punctured and obtusely angular behind. The elytra are much broader at the base than the pronotum, convex, with the sides gently rounded from just beyond the middle to the extremities: they bear rows of punctures, which are very indistinct upon the anterior half of the disc. The lower surface is very smooth and feebly punctured. The 3rd joint of the antenna is nearly twice as long as the 4th, and the club is small. The middle tibia is acutely spined at the end of its outer edge.

♂. The legs and antennæ are more slender than in the female, the front femur has a rather strong backward curvature, the front tibia is serrate along the middle of its inner edge and bent at the extremity, and all the tarsi are broadly dilated.

Length, 23–27 mm.; *breadth*, 8–10 mm.

S. INDIA: Anaimalai Hills (*H. L. Andrewes*); Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

40. *Encaustes arata*, sp. nov.

Black, opaque at the sides above and beneath, slightly shining along the middle and decorated with bright red markings consisting of a large **x**-shaped mark on each side of the pronotum, not quite reaching the margins, a humeral patch occupying the shoulder of each elytron, enclosing an elongate black spot and slightly produced at its inner hind angle, and an irregular

ante-apical crescent not quite reaching the inner or outer margin and toothed at its anterior edge.

Rather narrowly elongate, with fairly slender legs and antennæ. The head is moderately finely and closely punctured, with the interocular interval scarcely wider than the radius of the eye. The pronotum is not much wider than its length in the middle, fairly closely punctured in the middle and smooth at the sides, with the lateral margins very feebly curved, nearly parallel behind, all the angles nearly right angles and the base broadly lobed in the middle; there is a minute punctiform impression on each side near the base. The elytra are sulcate, with rows of well-marked punctures in the sulci, which vanish towards the extremities, the intervals being strongly convex. The sides are parallel except near the extremity. The prosternum and mesosternum are rather rugosely punctured, the metasternum and abdomen finely and irregularly except at the sides. The middle tibia has an acute lateral spine just before its extremity. Joints 3 to 8 of the antenna are elongate, the 3rd not quite as long as the 4th and 5th together, the 9th is as broad as it is long, and the last two are transverse.

♂. The front femur and tibia are elongate and curved; the latter has a blunt tooth near the base, and all the tibiæ are finely serrate at the inner edge.

Length, 22 mm.; *breadth*, 8 mm.

ASSAM: Patkai Hills (*W. Doherty*).

Type in the British Museum.

The markings are almost identical with those of *E. brevicollis*, with which this agrees also in the opacity of the surface (except along the middle of the body), but the pronotum is much longer, the sides of the elytra are more parallel, and the deep sulci render the species very easily recognised.

41. *Encaustes cruenta*.

Engis cruenta, Macl., * Annul. Jav. 1825, p. 42.

Encaustes cruenta, Lacord., Mon. Erot. 1842, p. 38.

Encaustes montana, Schenkl., Arch. f. Nat. lxxxiii, 2, 1917, p. 83.

Black and not very shining, the pronotum decorated on each side with an \times -shaped blood-red mark, nearly reaching the front and side margins and little farther from the basal margin, and each elytron having a short longitudinal line upon the shoulder, slightly curved inwards behind, and a transverse ante-apical bar with three points in front and two behind, of the same red colour.

Long and narrow in shape, with slender legs and antennæ. The head is strongly punctured, the pronotum finely but distinctly in the middle and near the base, scarcely perceptibly at the sides. The lateral margins are almost straight and parallel behind, convergent and feebly curved in front, with the anterior angles slightly acute, the posterior angles rectangular and the base

broadly lobed in the middle; there is a small oblique fovea near the base on each side. The scutellum is obtusely pointed and finely punctured. The elytra bear lines of extremely fine punctures. The shoulders are prominent and the sides nearly straight and parallel to beyond the middle and rounded behind. The prosternum is broad and impressed behind, slightly compressed in the middle anteriorly. The metasternum is sparingly punctured and the abdomen rather more strongly so. The middle tibia has an acute spine near the extremity of its outer edge.

♂. The front legs are elongate, the femur curved and the tibia toothed beneath before the middle, and from there curved and slightly serrate to the end, which is clubbed.

Length, 16–25 mm.; *breadth*, 6–9 mm.

S. INDIA: Shembaganur, Madura (*P. du Breuil*). BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.). TENASSERIM: Thagata (*L. Fea*, April). INDO-CHINA. BORNEO. JAVA.

Type in the British Museum.

The typical (Javan) form has a small red patch at the base of each elytron adjoining the scutellum and this is present in a single specimen from S. India (Shembaganur), but not in those from Burma and Indo-China (var. *montana*). *E. cruenta* seems to have numerous local races, and the examination of series of specimens, which are not at present available, may perhaps enable us to recognise several species.

42. *Encaustes brevicollis*, sp. nov.

Black, opaque at the sides above and beneath, slightly shining along the middle and decorated with bright red markings consisting of a large **x**-shaped mark on each side of the pronotum, not quite reaching the margins, a humeral patch occupying the shoulder of each elytron, partially enclosing an elongate black spot and produced a little obliquely backwards, and an irregular ante-apical crescent not quite reaching the inner or outer margin and toothed at its anterior edge.

Rather narrowly elongate, with slender legs. The head is moderately finely and closely punctured, with the interocular interval not much wider than the radius of the eye. The pronotum is very short, but not broad, its length in the middle not more than two-thirds of its width; it is finely punctured in the middle, almost unpunctured at the sides, with the lateral margins gently rounded, nearly parallel behind and slightly converging in front, with the front angles prominent and fairly sharp, the hind angles obtuse and the base rather strongly lobed, with a slight impression in the middle of the hind margin; there is a minute punctiform impression on each side near the hind margin. The scutellum is strongly transverse, but angulate behind. The elytra bear fine but distinct rows of punctures, which vanish towards the extremities, and the sides are not parallel, but a little rounded and convergent. The lower surface is finely and irregularly

Key to the Species of MICRENCAUSTES.

- 1 (6) Last sternite without large and close marginal pits.
- 2 (3) Elytra without transverse bands *liturata*, MacL., p. 78.
- 3 (2) Elytra decorated with transverse bands.
- 4 (5) Elytral marks very narrow, linear, the posterior one forming the figure 3 .. *figurata*, sp. n., p. 80.
- 5 (4) Elytral marks moderately broad *divisa*, sp. n., p. 79.
- 6 (1) Last sternite with a marginal chain of very large, close pits.
- 7 (10) Upper surface decorated with red or orange marks.
- 8 (9) Pronotum decorated..... *torquata*, Gorh., p. 79.
- 9 (8) Pronotum entirely black *decipiens*, sp. n., p. 81.
- 10 (7) Body entirely black..... *dehaani*, Cast., p. 82.

43. *Micrencaustes liturata*.

Engis liturata, MacL.* Annul. Jav. 1825, p. 42.

Encaustes liturata, Lacord., Mon. Erot. 1842, p. 43. Var. *nigripennis*, Kuhnt, Deuts. Ent. Zeitschr. 1908, p. 630.

Black, not shining, the pronotum decorated with two longitudinal curved lines not quite reaching the front and hind margins, the convex sides turned outwards and emitting a short branch in the middle of each, and each elytron having a short, narrow vitta close and parallel to the hinder edge of the external margin. These markings are deep blood-red in colour.

Moderately elongate and very convex in shape. The head is rather strongly punctured, the clypeus short and broad and very closely punctured. The pronotum is feebly punctured, except for a group of very large and deep punctures at the base on each side, the lateral margins are very gently and evenly curved, with well-marked raised borders, the front angles acute, the hind angles rather obtuse and the base rather narrowly lobed in the middle. The scutellum is transverse. The elytra bear rows of punctures, which are strongly marked at the base but become fainter and finally disappear before the extremity. The sides are nearly straight and parallel for two-thirds of their length. The prosternum bears rather large but shallow and scanty punctures and is produced into a blunt point at the front margin, the metasternum bears exceedingly fine punctures, and the abdomen is rather strongly punctured, especially the last segment. The antennæ are short, the 3rd joint about half as long again as the 4th.

Length, 13–17 mm.; *breadth*, 5.5–7 mm.

BURMA: Teinzo (*L. Fea*, May); Bhamo (*L. Fea*, Aug.).
MALAY PENINSULA. JAVA. BORNEO.

Type in the British Museum.

44. *Micrencaustes divisa*, sp. nov.

Black, not very shining, the pronotum decorated on each side with an orange-coloured α -shaped mark, almost attaining the front margin but distant from the side and hind margins, and each elytron bearing an irregular post-humeral bar, almost reaching the outer margin and sending two short branches towards the base and two shorter processes directed backwards, and an ante-apical bar with two anterior and four posterior points.

Elongate-oval and convex. The head is moderately punctured, the clypeus strongly and closely, and the eyes are separated by about one and a half times their radius. The pronotum is distinctly but not closely punctured, except at the sides, at each end of the base and near the middle; the lateral margins are rounded, the front angles rather acute and the hind angles almost rectangular. The elytra bear regular rows of minute punctures, with still more minute scattered punctures in the intervals. The prosternum is almost unpunctured, and its front margin is produced into a sharp point in the middle. The metasternum is sparsely punctured and the abdomen rather strongly and closely except in the middle. The antennæ are short, with the 3rd joint one and a half times as long as the 4th, and the club very compact, all its three joints being broadly transverse. The middle tibia has a sharp tooth at the end of its outer edge.

Length, 12–15 mm.; *breadth*, 5–6.5 mm.

BURMA: Maymyo (*H. L. Andrewes*, May).

Type in the British Museum.

45. *Micrencaustes torquata*.

Micrencaustes torquata, Gorh.* Proc. Zool. Soc. Lond. 1883, p. 76, pl. xviii, fig. 5; id., Stett. Ent. Zeit. lxii, 1901, p. 180.

Black, with a red spot between the eyes, the pronotum (with the exception of the outer margin, a row of four transversely placed spots before the middle and another row of three behind the middle, all except the two anterior median ones partly united with the outer margin, which are black) and two crescentic marks open behind upon each elytron orange-red in colour, the anterior elytral mark produced to the base and sending a branch to the lateral margin behind the shoulder, the posterior one placed before the apex, not touching either margin and toothed in the middle of its anterior edge.

Moderately elongate, convex and shining. The head is rather strongly punctured, the clypeus very closely, and the eyes are separated by an interval half as wide again as their radius. The pronotum is about one and a half times as wide as it is long, distinctly but irregularly punctured, with a smooth median line and with a few large punctures close to the base on each side; the sides are gently rounded, the front angles rather acute and the hind angles almost right angles. The scutellum is short, but distinctly angular behind. The elytra bear longitudinal rows of

fine punctures, disappearing towards the apices, and the intervals are very finely but unevenly punctured. The prosternum is rather sharply acuminate in front and slightly impressed behind, the meso- and meta-sterna are smooth and almost devoid of punctures, and the abdomen is moderately closely punctured and setose, the terminal segment having a row of very large and deep punctures placed close together along its outer edge. The antennæ are short, the 3rd joint about half as long again as the 4th.

Length, 14–15 mm.; *breadth*, 5·5–6 mm.

TENASSERIM (*E. T. Atkinson*). MALAY PENINSULA. SUMATRA (according to Gorham).

The species was originally stated to inhabit West Africa, owing to some mistake in labelling the type-specimen.

Type in the British Museum.

46. *Micrencaustes figurata*, sp. nov.

Black, with the pronotum orange (except the margins, a median longitudinal line and three dots placed in a triangle on

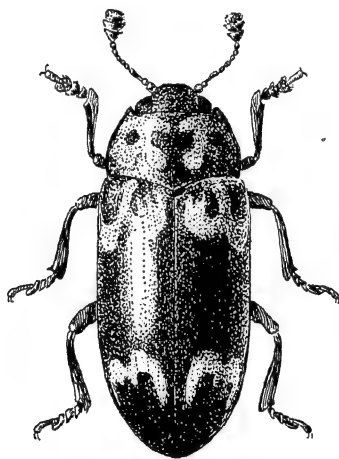


Fig. 17.—*Micrencaustes figurata*.

each side, all but the outermost coalescing with the black lines) and each elytron decorated with a basal patch, consisting of a small ring open anteriorly and continued behind the shoulder by a lateral loop, and an ante-apical mark shaped like a 3 with the ends directed backwards.

Elongate, rather parallel-sided, moderately smooth above. The head is strongly punctured, except in the middle, and the eyes are divided by about one and a half times their radius. The pronotum is short, finely and sparsely punctured, with a few

large punctures near the angles and on each side of the base; the lateral margins are strongly rounded, the front angles acutely produced and the hind angles obtuse. The elytra bear rather indistinct lines of minute punctures, with minuter scattered punctures in the intervals. The prosternum is almost unpunctured, its front margin sharply pointed in the middle, the metasternum very finely and sparsely punctured and the abdomen finely and sparsely in the middle and rather strongly at the sides, the terminal sternite bearing a row of about ten or twelve rather fine deep pits or punctures placed, not very closely, around its posterior margin. The 3rd joint of the antenna is one and a half times as long as the 4th and the last three joints are transverse and compact. The terminal tooth of the middle tibia is short.

Length, 16 mm.; *breadth*, 7 mm.

CEYLON: Kandy (March, Colombo Museum).

Type in the British Museum.

The type-specimen bears the locality "Ceylon" alone.

47. *Micrencaustes decipiens*, sp. nov.

Black, with two red fasciæ upon each elytron, one close to the base, which is reached between the shoulder and scutellum by a broad process divided into two by a minute black spot, and one just before the apex. The anterior fascia reaches the outer margin behind the shoulder but not the inner margin, and has four angular processes behind, and the posterior one does not quite reach either the inner or outer margin, has two angular processes anteriorly, and is strongly arched posteriorly.

Elongate and rather parallel-sided, not very convex nor very shining, except upon the pronotum and the middle of the body beneath. The sides of the elytra are opaque. The head is strongly punctured and the eyes are separated by one and a half times their radius. The pronotum is about one and a half times as wide as its length in the middle, and distinctly but not very strongly punctured, except near the base and in an irregular series on each side extending from the front to the hind margin at a little distance from the lateral margins; the lateral margins are rather straight and convergent in front and feebly curved behind, the front angles rather bluntly prominent, the hind angles rectangular and the base rather strongly lobed in the middle. The elytra bear regular rows of fine punctures, with extremely fine irregular punctures in the intervals. The prosternum is almost unpunctured and gently emarginate behind, the metasternum is smooth at the sides and distinctly but not closely punctured behind, and the abdomen is rather strongly and unevenly punctured, the terminal sternite

Length, 16·5 mm.; *breadth*, 7 mm.

E. HIMALAYAS: Darjeeling District, Pashok, 2000 ft. (*F. H.* Gravelly, May or June).

Type in the British Museum; co-type in the Indian Museum.

Closely similar to *M. elongata*, Arrow, from Tonkin, in which the anterior elytral band is connected only by a narrow process to the front margin, and the prosternal process is angularly notched behind.

48. *Micrencaustes dehaani*.

Engis dehaani, Cast., Hist. Nat., Col. ii, 1840, p. 15.

Encaustes dehaani, Lacord., Mon. Erot. 1842, p. 43.

Micrencaustes (subg. *Mimencausates*) *dehaani*, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 10.

Entirely black and not very shining, rather narrowly elongate in shape. The head is strongly and closely punctured, with the clypeus short and the eyes separated by about one and a half times their radius. The pronotum is rather finely punctured, with an irregular series of larger punctures on each side, extending from the front to the hind margin, midway between the lateral margin and the middle line; the lateral margins are gently rounded in front, straight and parallel behind, with the front angles bluntly produced, the hind angles right angles and the base broadly lobed in the middle. The scutellum is strongly transverse and obtusely angular behind. The elytra bear rows of punctures, which are moderately large in front but gradually diminish, becoming almost obsolete near the apex, and the intervals are coriaceous, but hardly visibly punctured; their lateral margins are nearly straight and parallel from the shoulders (where they are a little broader than the pronotum at the base) to about two-thirds of their length. The prosternum is acutely produced in the middle of the front margin and longitudinally impressed behind. The mesosternum has a strongly-impressed marginal line in front (where it is angulate) and at the sides, and the metasternum has an acute marginal impressed line and is almost unpunctured. The abdomen is punctured beneath and the terminal segment has a row of very large and deep pits at its posterior margin. The antennæ are short, with the club oval and all its joints strongly transverse. The front and middle tibiæ bear a sharp tooth at the end of the outer edge.

Length, 16–22 mm.; *breadth*, 6–8 mm.

ASSAM: Naga Hills (*W. Doherty*). TENASSERIM: Thagata (*L. Fea*, April). MALAY PENINSULA. JAVA.

Genus AULACOCHEILUS.

Aulacochelilus, Lacord., Mon. Erot. 1842, p. 245.

Aulacochilus, Bedel, Trans. Ent. Soc. France, (5) i, 1871, p. 271; Chap., Gen. Col. xii, 1876, p. 50.

TYPE, *Erotylus* (*Aulacochelilus*) *javanus*, Guér. (Java).

Range. S. Europe, Africa and the Oriental Region.

Oval or elongate-oval in shape, with rather short legs and antennæ, the 3rd joint of the latter much longer than the 4th, and the last three forming a small short club, the 10th joint more closely connate with the 11th than with the 9th. Eyes moderately large and prominent, coarsely faceted. Head without stridulatory files. Clypeus short, not distinctly emarginate. Sides of the mouth-cavity forming strong carinæ, continuous with the mandibles. Mandible very stout, with the tip short and bifid. Lobes of the maxilla short and of equal length, the inner one armed at the extremity with two strong elongate teeth; palpus with the basal joint slender and the terminal one strongly transverse. Submentum broadly triangular, with the apex excised. Mentum subquadrate, with a sharp longitudinal carina. Ligula small, feebly notched at the front edge; palpi very short and stout, with the terminal joint cupuliform and a little broader than it is long. Coxæ rather far apart, all with tangential lines. Prosternum broadly produced and bifid behind, not produced to a point in front, but with convergent lateral lines. Mesosternum short and broad. Metasternum with nearly straight front and hind margins. Abdomen with the basal segment about half as long again as the second, the succeeding four of nearly equal length. Tibiæ a little flattened. Tarsi dilated, joints 1 to 3 gradually increasing in width, 4 minute, inserted near the base of the preceding one.

The two sexes are practically identical externally in this genus.

Key to the Species of AULACCHILUS.

- | | |
|---|--------------------------------------|
| 1 (14) Elytra decorated. | |
| 2 (3) Each elytron with three pale marks. | <i>indicus</i> , Gorh., p. 84. |
| 3 (2) Each elytron with one or two pale marks. | |
| 4 (9) Elytra without elongate lunules. | |
| 5 (6) Basal pale patch of the elytra not containing small black spots | <i>quadripustulatus</i> , F., p. 85. |
| 6 (5) Basal pale patch containing several small black spots. | |
| 7 (8) Apex of each elytron with a pale patch | <i>episcaphoides</i> , Gorh., p. 86. |
| 8 (7) Apex of each elytron without a pale patch | <i>tricoloratus</i> , Gorh., p. 86. |
| 9 (4) Each elytron with an elongate pale lunule. | |
| 10 (11) Apex of each elytron with a pale patch | <i>crucis-melitæ</i> , Gorh., p. 87. |
| 11 (10) Apex of each elytron without a pale patch. | |
| 12 (13) Abdomen black; black elytral cross with equal arms | <i>birmanicus</i> , Bedel, p. 87. |
| 13 (12) Abdomen red; black elytral cross with unequal arms | <i>decussatus</i> , Csiki, p. 88. |
| 14 (1) Elytra uniformly dark. | |

- 15 (16) Sides of the metasternum without coarse punctures..... *oblongus*, sp. n., p. 89.
 16 (15) Sides of the metasternum coarsely punctured.
 17 (18) Coxal lines of the metasternum short; met-episterna deeply excavated *janthinus*, Lacord., p. 90.
 18 (17) Coxal lines of the metasternum long; met-episterna shallowly excavated *nilgirensis*, sp. n., p. 91.

49. *Aulacochilus indicus*.

Aulacochilus indicus, Gorh.,* Ann. Soc. Ent. Belg. xxxix, 1895, p. 328.

Black, each elytron ornamented with three very ragged-edged transverse orange bands, nearly equal in width to the intervals which separate them and extending almost from the outer to the

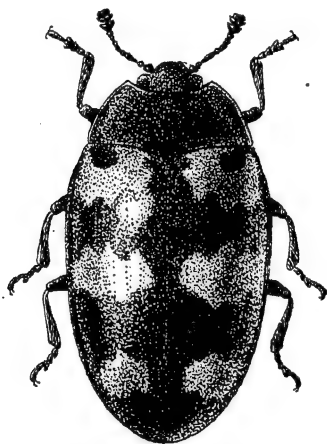


Fig. 18.—*Aulacochilus indicus*.

inner margin, the 1st lunate, reaching the base internally and enclosing a black shoulder-spot, the 2nd median and horizontal, and the 3rd subapical and oblique.

Oval in shape, convex, smooth and shining. The head is strongly punctured, the clypeus marked off by a deeply-impressed strongly-curved line and the eyes large, separated by less than twice their radius. The pronotum is more than twice as wide at the base as its length, distinctly punctured in the middle, but almost smooth at the sides, which are a little hollowed, with the margins raised, feebly rounded, strongly converging forwards, with the front angles bluntly produced and the hind angles acute; the base is lobed in the middle. The scutellum is acuminate and not strongly transverse. The elytra have well-marked lines of fine punctures,

with the intervals minutely and sparingly punctured; the outer margins are narrowly but distinctly flattened. The pro- and meso-sterna are almost smooth, the former broadly bifid behind and margined, except in front. The metasternum and abdomen beneath are finely and closely punctured, and the former and the basal segment of the latter have each a pair of strongly diverging striæ extending backwards from the coxal cavities. The legs and antennæ are short, the 3rd joint of the latter as long as the two succeeding.

Length, 7.5–10 mm.; *breadth*, 4.5–6 mm.

ASSAM: Sylhet, Chandkhira (*J. L. Sherwill*). TENASSERIM. S. INDIA: Kanara, Anaimalai Hills (*H. L. Andrewes*); Nilgiri Hills (*H. L. Andrewes*, Dec.); Palni Hills, 3000–6000 ft. (*P. S. Nathan*, May). UNITED PROVINCES: Almora, Kali Valley, 3000 ft. (*R. N. Parker*, July).

Type in the British Museum.

50. *Aulacochilus quadripustulatus*.

Erotylus quadripustulatus, F., Syst. Eleuth. ii, 1801, p. 6.

Engis subrotunda, MacL.,* Annul. Jav. 1825, p. 42.

Aulacochilus quadripustulatus, Lacord., Mon. Erot. 1842, p. 247.

Black and shining, each elytron ornamented with two bright orange-coloured lunules, the first extending from the basal margin to near the external margin, cutting off the humeral angle, and having two notches in its posterior margin, the second situated before the apical angle, not quite reaching the inner or outer margin and minutely toothed both at its convex anterior and its concave posterior margin.

Oval and convex, with rather short legs and antennæ. The head is strongly and closely punctured, with the clypeus very short and the eyes coarsely faceted and separated by an interval three times as wide as their radius. The pronotum is similarly but less closely punctured, with the lateral margins strongly elevated and nearly straight, except in front, the front angles bluntly rounded, the hind angles almost right angles and the base broadly lobed in the middle. The scutellum is rather sharply pointed and a little impressed at the apex. The elytra bear rows of very fine punctures, the outer margins are gently curved and a little flattened, gradually converging from a little behind the shoulders to the extremity, which is pointed. The prosternum is broad and emarginate behind and not pointed in front. The mesosternum is strongly transverse, the metasternum very finely and sparsely, and the abdomen more strongly and closely, punctured.

Length, 9–11 mm.; *breadth*, 5.5–6.5 mm.

ANDAMAN ISLANDS (*Roepstorff*). LOWER BURMA: Kawkaireik, Amherst District (*F. H. Gravely*, Nov.). HIMALAYAS: Kobo, 400 ft. (*S. Kemp*, Dec.). TONKIN. MALAY PENINSULA. JAVA. SUMATRA.

Type in the Copenhagen Museum; that of *subrotunda*, Maccl., in the British Museum.

The insect figured under the name of *Aulacochilus quadripustulatus* by Kuhnt in Wytsman's *Genera Ins.*, Erot. pl. iii, fig. 12, is not that species but *A. doriæ*, Bedel.

51. *Aulacochilus episcaphoides*. (Pl. I, fig. 7.)

Aulacochilus episcaphoides, Gorh.,* *Proc. Zool. Soc. Lond.* 1883, p. 84, pl. xviii, fig. 12.

Blue-black, with the anterior third of each elytron blood-red, except the inner and outer margins, a large spot in the humeral angle, another in the opposite angle and a pair of smaller detached spots behind the first. There is also a blood-red ante-apical patch, deeply excised at its posterior margin.

Elongate-oval, not very shining. The head is coarsely punctured, with the clypeus broad and truncate and the eyes divided by an interval equal to twice their radius. The pronotum is rather closely and strongly punctured, with the lateral margins strongly elevated, gently and uniformly rounded and strongly converging forwards, with the front angles rather sharp, the hind angles rectangular and the base slightly lobed in the middle. The scutellum is transverse. The elytra are subopaque at the sides, a little more shining upon the disc, and bear lines of not very close punctures, almost obliterated at the sides, the intervals very finely and sparingly punctured; their sides are very feebly rounded, and gradually converge from before the middle to the extremity. The lower surface is moderately shining. The prosternum is very broadly bifid behind, coarsely punctured at the sides and finely and sparingly in the middle. The metasternum is sparingly, and the abdomen finely and closely, punctured.

Length, 6·5–10·5 mm.; *breadth*, 3·5–5 mm.

SIKKIM: Darjeeling (*Ribbe*); Mungphu (*E. T. Atkinson*); Pedong (*Desgodins*). ASSAM: Jaintia Hills; Garo Hills, Tura, 3500 ft. (*S. Kemp*, July, Aug.). ANDAMAN ISLANDS. INDOS-CHINA.

Type in the British Museum.

52. *Aulacochilus tricoloratus*.

Aulacochilus tricoloratus, Gorh.,* *Ann. Mus. Civ. Genova*, xxxvi, 1896, p. 280.

Mahogany-brown, with a vaguely limited orange patch occupying the greater part of the anterior half of each elytron, but not reaching either the internal or external margin, and with four black spots upon each, two placed in a line just behind the basal margin, the 3rd a little farther back and near the suture, and the 4th, a little larger than the other three, placed almost in the middle of the elytron. The legs and the club of the antennæ are also black.

Elongate-oval, highly convex and not very shining. The head is coarsely punctured, with the clypeus very short and the eyes separated by an interval rather wider than twice their radius. The pronotum is rather strongly and evenly punctured, with the sides nearly straight, but strongly rounded near the anterior angles, which are blunt, the hind angles rectangular and the base gently trisinnate. The scutellum is almost semicircular but obtusely pointed behind. The elytra bear lines of punctures, which are strongly marked upon the anterior part of the disc, where the elytra are moderately shining, but become fainter towards the sides and apices, which are subopaque. The prosternum and metasternum are strongly but rather sparingly punctured, the abdomen strongly and closely.

Length, 8.5 mm.; *breadth*, 4 mm.

BURMA: Karen Hills, Cheba, 2700-3300 ft. (*L. Fea*, Dec.).
CAMBODIA (*Mouhot*).

Type in the Genoa Museum; co-type in the British Museum.

53. *Aulacochilus crucis-melitæ*.

Aulacochilus crucis-melitæ, Gorh., *Notes Leyd. Mus. x, 1888, p. 150, pl. vii, fig. 11.

Shining black, with bright yellow markings upon the elytra, consisting of an irregular crescent upon each, extending from the base almost to the middle and nearly reaching the outer margin, but not including the shoulder, which is black, and an obliquely quadrate subapical patch, with the anterior margin tridentate and the posterior margin excised.

Elongate-oval, and moderately convex. The head and pronotum are fairly strongly punctured, with the clypeus very short, rounded and rather more closely punctured, and the eyes prominent and separated by an interval rather more than twice their radius. The sides of the pronotum are strongly elevated, well rounded in front, nearly straight behind, with the front and hind angles nearly right angles and the base rather strongly lobed in the middle. The scutellum is transverse and very smooth and the elytra are finely but distinctly punctured, with larger punctures forming more or less distinct rows anteriorly, but becoming indistinct upon the posterior part. The prosternum is not pointed in front, the lateral lines only slightly converging. The mesosternum is short and broad and the metasternum and abdomen are finely punctured.

Length, 6-7 mm.; *breadth*, 3-5 mm.

ANDAMAN ISLANDS (*Roepstorff*). BORNEO. SUMATRA. JAVA.

Type in the Leyden Museum; co-type in the British Museum.

54. *Aulacochilus birmanicus*.

Aulacochilus birmanicus, Bedel, Ann. Soc. Ent. France, (5) i, 1871, p. 280; Gorh., Stett. Ent. Zeit. lxii, 1901, p. 184.

Black, each elytron decorated with a longitudinal orange mark,

extending from the basal margin to beyond the middle and not reaching either the inner or outer margin, but sending a very broad branch from the middle towards the outer margin and having a deep, nearly circular, excision at the middle of the inner edge.

Elongate-oval, convex and moderately shining above. The head is strongly punctured, the clypeus closely, with the eyes large and prominent, separated by a distance not quite equal to twice their radius. The pronotum is similarly punctured, and has the sides rather strongly rounded, with well-marked raised margins, the front angles rectangular and the hind angles obtuse. The scutellum is sharply angulate behind and not very transverse. The elytra bear lines of well-marked, but not very close-set, punctures, the intervals finely and sparingly punctured. The prosternum is very broad behind and has straight convergent lateral lines, which almost meet in front but do not reach the front margin. The mesosternum is extremely short, straight behind and arcuate in front, and the metasternum and abdomen are fairly closely punctured, the metasternum and 1st ventral segment having complete coxal lines reaching the lateral margins. The legs are stout and the antennæ not long, with the 3rd joint twice as long as the 4th and the club rather broadly oval.

Length, 4.5–6 mm.; *breadth*, 2.5–3 mm.

BURMA: Rangoon. MALAY PENINSULA: Singapore. BORNEO: Sarawak.

Type unknown.

The collection of EROTYLIDÆ formed by the late M. Louis Bedel, who monographed the genus *Aulacochilus*, passed on his death to the Paris Museum, but the types of this genus had been lost during his lifetime. The unique specimen of the present species was described from the Sédillot collection. Not having seen it, I have accepted Gorham's attribution of the name to the present Malayan species, in spite of a slight incompatibility with the original description. Thus the intervals of the elytral striæ are said to be "densely" punctured and the basal abdominal sternite almost unpunctured, which is not an accurate description of the present species.

The single specimen taken by Fea at Bhamo and also identified by Gorham as *A. birmanicus* agrees still less and is almost certainly different, but it is in bad condition.

55. *Aulacochilus decussatus*.

Aulacochilus decussatus, Csiki,* Ann. Nat. Mus. Hung. 1911, p. 611.

Black, with the abdomen beneath and the elytra red, the latter with the outer and inner margins and the apices black, the outer margin dilated at the shoulder and posterior part, and the sutural margin dilated before the middle, forming a cruciform common black patch.

Oval, convex, smooth and shining. The head and pronotum

are moderately and not very closely punctured, the eyes separated by a distance equal to twice their radius. The sides of the pronotum are strongly raised and gently and evenly rounded, the front angles are bluntly rectangular, the hind angles obtuse and the base broadly lobed in the middle. The scutellum is transverse and obtusely angular behind. The elytra bear lines of distinct, but not closely-set, punctures, and the intervals are more finely and rather sparingly punctured. The prosternum is very coarsely punctured at the sides, very finely and sparingly in the middle, and has nearly straight, convergent lateral lines not quite reaching the front margin. The mesosternum is extremely short and the metasternum and abdomen are closely punctured and bear complete coxal lines which reach the lateral margins. The legs are moderately stout and the antennæ not long, with the 3rd joint twice as long as the following one, the 4th to 8th slightly elongate and the club broadly oval, with the last joint small.

Length, 6.5 mm.; *breadth*, 3.5 mm.

INDIA: Patadalu. JAVA: Bantam (*de Vos*).

Type in the Hungarian National Museum, Budapest.

I am indebted to Mr. Csiki for the loan of his type, the only hitherto-known specimen of this species. He is unable to enlighten me as to the situation of Patadalu. A nearly identical specimen from Java has been kindly given to the British Museum by Mr. de Vos.

This is a rather more oval, less narrow and convex species than the preceding, with the red elytral mark a little more produced behind. The arms of the black cross common to the two elytra are therefore very unequal, whereas they are equal in *A. birmanicus* and are so described by Bedel.

56. *Aulacochilus oblongus*, sp. nov.

Entirely blue-black, with the organs of the mouth and the last tarsal joint red, the tarsi, the extremities of the tibiæ and the antennæ clothed with golden hairs, the rest of the body almost devoid of hair.

Elongate-oval and convex, with the upper surface more or less dull and the lower surface more shining. The head and pronotum are distinctly punctured, the clypeus rather more closely, the eyes separated by about two and a half times their radius. The pronotum is twice as wide as its length in the middle, with the sides scarcely curved except in the front, the raised margin a little thickened in front and behind, the angles rather blunt, the front ones slightly produced, the hind ones rectangular and the base well lobed in the middle. The scutellum is pointed behind and not very broad. The elytra bear longitudinal rows of punctures, which are distinct at the base but become gradually more indistinct from there to the apex, where they are scarcely visible; the interstices are scarcely perceptibly punctured. The prosternum is triangular between the coxæ, with long incised lateral lines, and produced to

a point in front; its sides are coarsely and unevenly punctured. The mesosternum is broad. The metasternum is very finely and sparingly punctured, with very short coxal lines not reaching the middle of the metasternum, and its episterna are shallowly excavated in their anterior part. The abdomen is a little more strongly and closely punctured beneath. The antennæ are short, the 3rd joint equal in length to the succeeding three together, the 4th to 8th subequal and the last three forming a small oval club.

Length, 6-10 mm.; breadth, 3-4.5 mm.

SIKKIM: Mungphu (*E. T. Atkinson*), Gopaldhara (*H. Stevens*). ASSAM: Patkai Hills (*W. Doherty*), Goalpara (May). BENGAL: Sundarbans (*C. F. C. Beeson*, Feb.). BURMA: Tharrawaddy (*G. Q. Corbett*), Teinzo (*L. Fea*, May). TENASSERIM. SIAM. INDO-CHINA. CAMBODIA.

Type in the British Museum.

Mr. Beeson found this feeding on the underside of a white *Polyporus* fungus.

This species has a more opaque upper surface than *A. janthinus* and is distinctly longer in shape, as well as attaining a larger average size, although in this respect individuals vary greatly. The large punctures or pits at the sides of the metasternum are absent in *A. oblongus*. It is not impossible that this is *A. atrocyaneus*, Motsch. (described from Burma), but the size and description apply better to *A. janthinus*. Motschulsky's type being probably non-existent this question must remain unsolved.

57. *Aulacochilus janthinus*.

Aulacochilus janthinus, Lacord., Mon. Erot. 1842, p. 250.

Aulacochilus sericeus, Bedel, Ann. Soc. Ent. France, (5) i, 1871, p. 282 (new syn.).

? *Aulacochilus atrocyaneus*, Motsch., Etudes Ent. vii, 1858, p. 117. (*Aulacochilus atrocæruleus*, Bedel, Ann. Soc. Ent. France, (5) i, 1871, p. 283.)

Entirely blue-black, with the organs of the mouth and the last tarsal joint red, the tarsi, the extremities of the tibiæ and the antennæ clothed with golden hairs, the rest of the body almost devoid of hair.

Narrowly oval, not elongate, convex, shining beneath, not very opaque and sometimes rather shining above. The head and pronotum are rather strongly and closely punctured, the clypeus very closely, and the eyes are separated by about two and a half times their radius. The pronotum is more than twice as wide as its length in the middle, its sides are rounded, the front angles scarcely acute and the hind ones obtuse. The scutellum is smooth and not very broad. The elytra bear longitudinal rows of punctures, which are well marked at the base but become gradually less so towards the apex; the intervals bear very fine and scattered punctures. The prosternum is triangular between the coxæ, with long incised lateral lines, and produced to a point in front; its sides are coarsely punctured. The mesosternum is broad and

smooth, and the metasternum is very finely and sparingly punctured, with very large punctures near its lateral margins. The coxal lines extend as far as the middle of the metasternum. The met-episternum bears a deep pit at its anterior end. The abdomen is closely punctured. The antennæ are short, the 3rd joint nearly as long as the three succeeding together, the 4th to the 8th subequal in length and the last three forming a small oval club.

Length, 5-7.5 mm.; *breadth*, 3-4 mm.

ASSAM: Patkai Hills (*W. Doherty*), Sadiya (*W. Doherty*).
BURMA: Katha (*L. Fea*, Nov.). SIAM. INDO-CHINA. MALAY
PENINSULA. JAVA.

Types unknown.

This is a very common Malayan species, but seems less widely distributed on the continent than *A. oblongus*. The three names given above probably all belong to it, all the descriptions referring to a "subnitid" insect. Although varying to some extent in that respect it is never very brilliant, like the Sumatran *A. micans*, Bedel, nor quite dull like *A. oblongus*. It is narrowly oval in shape, but less elongate than the latter insect.

58. *Aulacochilus nilgirensis*, sp. nov.

Steely-blue or green, brighter above than beneath, with the organs of the mouth and the tarsi red, the tarsi, extremities of the tibiae and the antennæ clothed with golden hair and the remainder of the body devoid of hair.

Oval, very convex, smooth and shining. The head is rather strongly punctured, the clypeus more closely, and the eyes are separated by an interval about three times as wide as their radius. The pronotum is twice as wide as its length in the middle, finely and not closely punctured, with its sides very feebly rounded, the front angles slightly acute, the hind angles obtuse and the base gently lobed in the middle. The scutellum is finely punctured, obtusely pointed and not wide. The elytra bear longitudinal rows of punctures, which are large and deep at the base and become gradually finer towards the apices, where they almost vanish. The intervals contain fine scattered punctures. The prosternum is broadly triangular between the coxæ, very bluntly pointed in front and coarsely punctured at the sides. The mesosternum is very short. The metasternum is very finely and sparsely punctured, with long coxal lines extending to near the hind margin, and between these and the lateral margin there are very large punctures. The met-episternum is shallowly excavated in its anterior part. The abdomen is finely and sparsely punctured in the middle, more strongly at the sides. The 3rd joint of the antenna is almost as long as the succeeding three, joints 4 to 8 subequal in length.

Length, 6 mm.; *breadth*, 3 mm.

SOUTH INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

Division TRITOMINI.

The TRITOMINI are generally of small size, but very numerous in species. They are of short and compact form, frequently with very short and stout legs. The antennæ vary greatly. The third joint is sometimes very long, and the club may consist of three, four, or five joints, although composed of three only in the vast majority of species. The sides of the mouth form flat plates, behind which the antennæ pass in the position of rest, the maxillæ are without teeth and their palpi have the terminal joint strongly transverse. With very few exceptions the head bears a pair of stridulatory files upon the dorsal surface, placed rather far apart near the posterior margin, and scraped by a ridge within the thoracic cavity.

Key to the Genera of TRITOMINI.

- | | | |
|---|-------------------------|-------------------|
| 1 (2) Eyes large and coarsely faceted .. | AMBLIOPUS, Lacord., | |
| 2 (1) Eyes small and finely faceted. | | [p. 92. |
| 3 (16) Club of the antenna 3-jointed. | | |
| 4 (7) Terminal joint of the antenna very broad, truncate. | | [p. 100. |
| 5 (6) Tibiæ very short and broad | PETALOSCELIS, Gorb., | |
| 6 (5) Tibiæ not short and broad..... | APOROTRITOMA, n. gen., | |
| 7 (4) Terminal joint of the antenna not very broad. | | [p. 103. |
| 8 (9) Front tibia toothed, not hollowed, at the end | DACTYLOTRITOMA, | |
| 9 (8) Front tibia hollowed at the end, not toothed. | | [n. gen., p. 105. |
| 10 (13) Club of the antenna very flat and closely-jointed. | | |
| 11 (12) Antennal club narrow, with a very small last joint; head with stridulatory files | CYRTOMORPHUS, Lacord., | |
| 12 (11) Antennal club broad, with a large last joint; head without stridulatory files..... | | [p. 106. |
| 13 (10) Antennal club not very flat nor very closely-jointed. | NEOTRIPLAX, Lewis, | |
| 14 (15) Prosternum flat, without converging lines; middle and hind coxæ not widely separated | | [p. 113. |
| 15 (14) Prosternum with converging lines, not flat in front; middle and hind coxæ widely separated..... | RHODOTRITOMA, n. gen., | |
| 16 (3) Antennal club composed of more than three joints. | | [p. 115. |
| 17 (18) Antennal club short, 5-jointed | TRITOMA, Fabr., p. 119. | |
| 18 (17) Antennal club very long, 4-jointed.. | | [p. 142. |
| | SPONDOTRIPLAX, Crotch, | |
| | TETRASTRITOMA, n. gen., | |
| | | [p. 145. |

Genus **AMBLIOPUS.**

Amblyopus, Lacord., Mon. Erot. 1842, p. 197; Chap., Gen. Col. xii, 1876, p. 38; Arrow, Ann. Mag. Nat. Hist. (8) xx, 1917, p. 139.

TYPE, *Triplax vittata*, Oliv.

Range. S. Asia and Tropical Africa.

Elongate-oval, with short legs and antennæ. Tibiæ rather triangular in shape, dilating from base to extremity. Tarsi moderately broad, the three basal joints progressively dilated, the 4th minute. Third joint of the antennæ long, the club rather small and oval, except in *A. trigonocerus*, with the 10th joint more closely united to the 11th than to the 9th. Eyes very large, not far apart, coarsely faceted. Head with long stridulatory files placed close to the posterior edge. Sides of mouth flattened and semicircular. Mentum longer than broad, with a long median carina. Ligula narrow. Labial palpi moderately long, with the last joint slightly elongate. Maxilla unarmed, the outer lobe longer than the inner. Maxillary palpus with the terminal joint large, twice as wide as long. Mandible produced at the tip and acutely bifid. Pronotum with conspicuous pores in each angle. Prosternum short, rather broad behind the coxæ. Mesosternum broad. Metasternum and first ventral sternite with coxal lines.

Key to the Species of AMBLIOPUS.

- 1 (2) Interocular space scarcely wider than the eye *vittatus*, Oliv., p. 93.
- 2 (1) Interocular space much wider than the eye.
- 3 (16) Elytra not long, distinctly striated.
- 4 (7) Pronotum decorated with three black spots.
- 5 (6) Last joint of the antenna larger than the two preceding together *trigonocerus*, sp. n., p. 94.
- 6 (5) Last joint of the antenna smaller than the two preceding together.. *cinctipennis*, Lacord., [p. 95.]
- 7 (4) Pronotum not spotted.
- 8 (13) Pronotum and legs entirely red or yellow.
- 9 (10) Last joint of the antenna pointed; tibiæ not very broad at the end .. *nilgirensis*, sp. n., p. 96.
- 10 (9) Last joint of the antenna not pointed; tibiæ very broad at the end. [p. 97.]
- 11 (12) Antennæ entirely red *colombonicus*, Karsch,
- 12 (11) Club of the antenna (except the tip) black *triplacoides*, Gorb., p. 97.
- 13 (8) Pronotum and legs not entirely red or yellow.
- 14 (15) Club of the antenna pale, tip not pointed *pallidicornis*, sp. n., p. 98.
- 15 (14) Club of the antenna dark, with the tip red, pointed *substriatus*, Gorb., p. 98.
- 16 (3) Elytra long, with very feeble lines of punctures *flaviventris*, sp. n., p. 99.

59. *Amblyopus vittatus*.

Triplax vittata, Oliv., Entom. v, 1807, p. 490, No. 896, pl. i, fig. 2.

Amblyopus vittatus, Lacord., Mon. Erot. 1842, p. 198.

Shining black, with a triangular orange patch on each side of

the vertex of the head, an irregular patch of the same colour occupying the humeral angle of each elytron, containing a small round black spot and emitting a short blunt internal lobe and a pointed posterior one, and a triangular subapical patch, with a pointed anterior process, which sometimes unites with the posterior process of the humeral patch. Occasionally the humeral patch does not completely enclose the small black spot behind.

Narrowly oval and not very convex. The head and pronotum are finely and evenly punctured, with the clypeus broadly emarginate in front, and the eyes very large, with the intervening space scarcely wider than the radius of one of them. The lateral margins of the pronotum are very gently rounded, the front angles are bluntly rectangular and the hind angles obtuse. The scutellum is obtusely angular and rather transverse. The elytra dilate a little behind the shoulder and gradually narrow from there to the extremities; they bear rather deep striæ containing close, deeply-impressed punctures. The prosternum is pointed in front and very broad behind, the mesosternum and metasternum bear scattered punctures, and the abdomen is finely and closely punctured beneath. The tibiæ are moderately broad at the extremity, and the antennæ are short, with the 3rd joint twice as long as the 4th, the 9th and 10th strongly transverse and the last small and globular.

Length, 6–10 mm.; *breadth*, 3–5 mm.

SIKKIM: Gopaldhara (*H. Stevens*). BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.). ASSAM: Sylhet, Chandkhira (*J. L. Sherwill*). BENGAL: Calcutta (*Olivier*). TONKIN. MALAY PENINSULA. BORNEO. JAVA. SUMATRA.

Type unknown.

60. *Amblyopus trigonocerus*, sp. nov.

Shining black, with the head and prothorax orange, the former decorated with a small black spot between the eyes, the latter with a large oval median spot, extending from the front to the hind margin, and a small spot on each side. The elytra have each a small orange spot at the shoulder and another in the extreme apical angle. The antennæ are reddish, with the club black, and the femora and tarsi may be wholly or partly yellowish.

Oval and moderately convex, with short antennæ, the legs not very short but the tibiæ rather broad at the ends. The head is rather closely punctured, with the clypeus gently emarginate in front and the eyes divided by rather less than twice their radius. The pronotum is minutely and rather evenly punctured, with the sides nearly straight, the front angles very blunt, the hind angles almost right angles, and the base lobed in the middle. The elytra bear rows of fine and close punctures and the intervals are very minutely and sparingly punctured. The metasternum is rather sparingly punctured and the abdomen closely, especially upon the last three sternites. The 3rd joint of the antenna is as long as

the 4th and 5th together, and the club is large, compact, flat and triangular, the 9th and 10th joints very short and the last broadest, larger than the two preceding together and obliquely truncate at the end. The terminal joint of the maxillary palpus is one and a half times as wide as it is long.

Length, 4-5 mm.; *breadth*, 2.5-3 mm.

CEYLON: North Province, Vavuniya (Dec.).

Type in the British Museum; co-type in the Colombo Museum.

The pattern gives this species a rather deceptive resemblance to *Amblyopus cinctipennis*, but it is smaller and shorter than that insect. The size and shape of the antennal club are very remarkable, and, but that the insect is typical in all other respects, might have been considered to exclude it from *Amblyopus*. The antennæ differ greatly in the species of this genus.

61. *Amblyopus cinctipennis*.

Amblyopus cinctipennis, Lacord., Mon. Erot. 1842, p. 199.

Tritoma præposita, Walk.,* Ann. Mag. Nat. Hist. iii, 1859, p. 259;

Arrow, op. cit. (8) iv, 1909, p. 196.

Bright red, with a spot between the eyes, a large spot in the middle of the pronotum, with a smaller one on each side of it, the

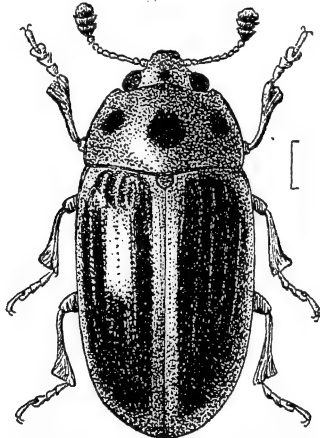


Fig. 19.--*Amblyopus cinctipennis*.

disc of each elytron, leaving only a narrow red border, sometimes absent, the metasternum and abdomen beneath, and the club of the antenna, black. Pale, apparently immature, specimens are common in which the black markings are faint or absent.

Rather narrowly oval, moderately convex, smooth and shining, with rather short legs and antennæ. The head is moderately punctured, with the clypeus flat and emarginate in front, the eyes separated by rather more than twice their radius. The pronotum is

short, very finely punctured, with the sides rounded and finely margined, the front angles almost right angles, the hind angles very obtuse and the base trisinate. The scutellum is transverse and obtusely pointed behind. The elytra bear rather strongly impressed rows of fine and close punctures, with finely punctured intervals; their greatest width is a little behind the shoulders and the sides are feebly curved, scarcely converging behind, the extremities rather abruptly rounded. The prosternum is broad and nearly straight behind and scarcely pointed in front, the mesosternum nearly quadrate and the metasternum and abdomen rather closely punctured. The 3rd joint of the antenna is twice the length of the 4th and the club is rather broadly oval, with all its joints strongly transverse. The tibiæ are triangular, very broad at the extremities, which are obliquely and sharply truncate in them all, and the tarsi are moderately wide.

Length, 4–7 mm.; *breadth*, 2.5–4 mm.

BENGAL: Barway, Nowatoli, Chota Nagpur (*Cardon*). BOMBAY: S. Belgaum (*H. E. Andrewes*). UNITED PROVINCES: Dehra Dun (*S. N. Chatterjee*, Aug.); W. Almora, Kumaon, Ranikhet (*H. G. Champion*, July, Aug.). CEYLON: Peradeniya (*E. E. Green*, Nov.); Colombo (Aug.).

Larvæ of *Amblyopus cinctipennis* were found by Nietner in Ceylon, together with those of *Episcapha quadrimacula*, beneath bark encrusted with fungus. They have been shortly described by Candèze in *Mém. Soc. Roy. Liège*, xvi, 1861, p. 397. Although the beetle is of shorter form than the companion species, the larva is said to be longer. It is almost destitute of spines, bears a pair of short caudal processes, and is dirty white in colour.

62. *Amblyopus nilgirensis*, sp. nov.

Bright yellow, with the elytra and the club of the antenna (except the tip of the last joint) black.

Elongate-oval, not very convex, smooth and shining, with moderately long legs and antennæ. The head and pronotum are very finely and evenly punctured, with the clypeus rather narrow and the eyes separated by less than twice their radius. The lateral margins of the pronotum are gently curved, the front angles rounded and the hind angles obtuse. The elytra bear impressed rows of fine and close punctures, and the intervals are convex and very minutely and sparsely punctured. The prosternum is almost unpunctured, the metasternum very sparingly but unevenly and the abdomen closely in the middle and more coarsely and less closely at the sides. The 3rd to the 8th joints of the antenna are more or less elongate, the 3rd as long as the next two together, the club rather small and narrow, and the last joint pointed and narrower than the two preceding joints. The terminal joint of the maxillary palpi is twice as wide as it is long.

Length, 6.5 mm.; *breadth*, 3.5 mm.

S. INDIA: Nilgiri Hills, 3500 ft. (*H. L. Andrewes*, Aug.).

Type in the British Museum. I have seen only a single specimen.

63. *Amblyopus colombonicus*.

Cyrtotriplax colombonica, Karsch,* Berl. Ent. Zeits. xxvi, 1882, p. 388.

Bright red, with the eyes, the elytra, metasternum and abdomen black.

Elongate-oval, moderately convex, smooth and shining, with short legs and antennæ. The head is fairly strongly punctured, with the eyes large and separated by twice their radius. The pronotum is a little more sparingly punctured, with the sides gently rounded, the front angles very blunt and the hind angles minutely excised, with the angle-pores very distinct, and the base gently trisinuate. The elytra are rather deeply punctate-striate, with the intervals very finely and sparsely punctured. The metasternum is rather strongly but not closely punctured, the abdomen beneath strongly and densely. The 3rd joint of the antenna is as long as the two succeeding it and the club is rather short and moderately broad, with all its joints transverse. The tibiæ are short and triangular, the hindmost pair with the external angle rather sharp.

Length, 5 mm.; *breadth*, 2.5 mm.

CEYLON. S. INDIA: Coimbatore (*M. Walhouse*); Tellicherry, Malabar Coast (*T. Clapton*).

Type in the Berlin Museum of Zoology. The type has been kindly sent to me for examination.

The species is extremely close to *A. triplacoides*, but a little less elongate in shape, with shorter legs and rather less broad antennal club, which is of the same red colour as the rest of the antenna.

64. *Amblyopus triplacoides*.

Amblyopus triplacoides, Gorh.,* Ann. Soc. Ent. Belg. xxxix, 1895, p. 326.

Bright red, with the eyes, the club of the antenna (except the extreme end), the elytra, metasternum and abdomen black.

Elongate-oval, moderately convex, smooth and shining. The head is moderately strongly punctured, with the eyes large and separated by barely twice their radius, and the clypeus angularly emarginate in front. The pronotum is a little more finely punctured, with the lateral margins feebly rounded, the front angles rounded and the hind angles obtuse, the angle-pores of each distinct; the base is gently trisinuate. The scutellum is nearly semicircular. The elytra are deeply striated, the striæ closely punctured, the intervals convex and finely and irregularly punctured. The prosternum is slightly emarginate at the posterior edge, the mesosternum small and quadrate, the metasternum rather strongly but scantily punctured, with a curved impressed

line at its anterior margin, and the abdomen strongly and closely punctured, with the intercoxal process rather narrow. The antennæ are short, with the 3rd joint as long as the two following ones, the club short and broad and all its joints strongly transverse. The legs are stout, the tibiæ long, but rather broad at the extremity.

Length, 4.5–6 mm.; *breadth*, 2.5–3 mm.

BOMBAY: Belgaum (*H. E. Andrewes*). UNITED PROVINCES: Dehra Dun (*S. N. Chatterjee*, Aug.).

Type in the British Museum.

This was found at Dehra Dun upon leaves, and also upon the flowers of *Tectona grandis*.

65. *Amblyopus pallidicornis*, sp. nov.

Black above and beneath, with the extremities of the tibiæ, the tarsi and antennæ ferrugineous.

Elongate-oval, smooth and shining, with short legs and antennæ. The head is finely and sparsely punctured, with the eyes large, prominent and separated by twice their radius. The pronotum is similarly punctured, with the lateral margins gently rounded, the front angles completely rounded off and the hind angles obtuse, with very large angle-pores. The elytra bear rows of rather close and deep punctures, with extremely minute scanty punctures in the intervals. The prosternum is almost devoid of punctures, the metasternum and first ventral sternite are scantily punctured and the remainder of the sternites rather strongly and closely. The 3rd joint of the antenna is as long as the two following, and the three joints of the club are strongly transverse. The tibiæ are short and rather broad at the extremities, and the outer angle of the hind tibia is almost rectangular.

Length, 4.5 mm.; *breadth*, 2.5 mm.

UNITED PROVINCES: Dehra Dun (*S. N. Chatterjee*, Aug.).

Type in the British Museum.

The entirely black body and pale antennæ render this species easily recognisable.

66. *Amblyopus substriatus*.

Amblyopus substriatus, Gorb.,* *Ann. Mus. Civ. Genova*, xxxvi, 1896, p. 281.

A. concolor, Kuhnt,* *Deuts. Ent. Zeitschr.* 1910, p. 232 (new syn.).

Black or dark brown, with the head (except a vaguely-defined dark spot upon the vertex), broad lateral borders to the pronotum, the humeral angles of the elytra, the prosternum, the tarsi, and the footstalk and apex of the antenna, deep yellow or red. Many specimens are entirely black, except the head, tarsi and parts of the antennæ.

Elongate-oval, moderately convex, smooth and shining. The head and pronotum are finely punctured, the clypeus angularly emarginate in front, with straight, convergent sides, and the eyes

large and separated by an interval less than twice their radius. The sides of the pronotum are feebly rounded in front, straight behind, the front angles are very blunt, the hind angles slightly excised, the excision containing a pore, and the base trisinate. The scutellum is slightly transverse and obtusely angulated at the apex. The elytra are of the same width as the pronotum at the base and are rather deeply striated, the striæ having rows of fine close punctures, and the intervals are very finely and sparsely punctured. The tibiæ dilate slightly from base to extremity. The 3rd joint of the antenna is twice as long as the 4th, and the club is loosely articulated, joints 9 and 10 strongly transverse, and 11 small and pointed at the end. The pronotum is rugulose, the metasternum sparingly punctured in the middle and less so at the sides, and the abdomen rather strongly and closely punctured, with a rather narrow intercoxal process. Male specimens are usually larger than females and have the tibiæ and tarsi more dilated.

Length, 6-8 mm.; breadth, 3-5 mm.

BURMA: Bhamo (*L. Fea*, July); Karen Hills, Cheba, 2700-3300 ft. (*L. Fea*, Dec.). ASSAM: Garo Hills, 3500-3900 ft. (*S. Kemp*, July, Aug.). BENGAL: Chota Nagpur, Nowatoli (*Père Cardon*, Sept.). SIKKIM: Gopaldhara, Darjeeling (*H. Stevens*, Aug., Sept.). UNITED PROVINCES: W. Almora, Kumaon, Ranikhet (*H. G. Champion*, Aug.), Dehra Dun (*S. N. Chatterjee*, Aug.). S. INDIA: Nilgiri Hills, Auchterlony Valley, 3000-3500 ft. (*H. L. Andrewes*, June), Kanara (*T. R. D. Bell*). CEYLON: Peradeniya (*A. Rutherford*, July).

Recorded by Dr. Rutherford as feeding on fungus, and taken by Mr. H. L. Andrewes from toadstools.

Type in the Genoa Museum; co-type in the British Museum. Type of *concolor* in the British Museum.

67. *Amblyopus flaviventris*, sp. nov.

Black, with the abdomen bright orange-yellow and the organs of the mouth and the last tarsal joint reddish.

Elongate-oval, smooth and shining, not very convex, with the legs and antennæ moderately long, the tibiæ truncate but not very broad at the end. The head is strongly and rather closely punctured, with the eyes large and prominent, separated by a space twice their radius. The pronotum is strongly and closely punctured at the sides and more finely in the middle, the lateral margins are very feebly curved, the front angles prominent, but blunt, and the hind margins obtuse. The scutellum bears a few fine punctures. The elytra are very finely and sparsely punctured, some of the punctures being slightly larger than the rest and arranged in longitudinal rows. The prosternum bears only a few minute punctures, and the coxal lines extend little in front of the coxæ. The mesosternum also bears only a few minute punctures. The metasternum is finely and sparsely punctured, but the punctures are a little larger at the sides. The coxal lines are short.

The abdomen is without coxal lines, and is very finely and sparsely punctured in the middle and rather more strongly and closely at the sides. Joints 3 to 7 of the antenna are elongate, the 3rd about equal in length to the two following, and the last three are transverse but not closely articulated. The terminal joint of the maxillary palpus is about three times as wide as it is long.

Length, 10 mm.; *breadth*, 5 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

This is the largest and relatively the narrowest of the Eastern species of the genus. It very closely resembles *Amblyopus abdominalis*, Csiki, from Tonkin (incorrectly referred to the genus *Aulacochilus* by its describer), of which the coloration is the same, but it is a little larger and the elytra are less strongly punctured. In both species the presence of the hidden stridulatory files is indicated by a very minute patch of translucent membrane on each side of the front margin of the pronotum.

Genus PETALOSCELIS.

Petaloscelis, Gorb., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 282;
Arrow, Ann. Mag. Nat. Hist. (8) xx, 1917, p. 140.

TYPE, *Petaloscelis instabilis*, Gorb.

Range. The Indo-Malayan Region and Tropical Africa.

Oval in shape, with very short antennæ and legs, the latter having the femora short and thick, grooved to receive the tibiæ, the tibiæ triangular, with the extremities very broad and hollowed for the tarsi, and the three basal joints of the tarsi rather broadly dilated. The 3rd joint of the antenna more than twice the length of the following one, the 4th to 8th very short and the last three very broad and transverse, forming a large, short and very closely-articulated asymmetrical club, all three joints being more produced on the outer than on the inner side. Occipital region of the head with a well-developed stridulatory file flanking the posterior emargination on each side. Eyes rather small and finely faceted. Sides of the mouth-cavity flat and semicircular. Mentum quadrate, a little wider at the base than in front. Ligula emarginate in front. Last joint of the labial palpus pear-shaped. Lobes of the maxillæ small and subequal, the last joint of the palpus not very strongly transverse. Apex of the mandible produced, sharply bidentate, toothed at the base. Pronotum with well-marked angle-pores. Prosternum flat, slightly pointed in front, broad and emarginate behind. Metasternum and 1st ventral sternite with strongly-marked oblique coxal lines.

Key to the Species of PETALOSCELIS.

- 1 (6) Last joint of the antenna much broader
than long.
- 2 (3) Elytra with pale markings *instabilis*, Gorb., p. 101.

- 3 (2) Elytra without pale markings.
 4 (5) Dark above *similis*, sp. n., p. 102.
 5 (4) Pale above and beneath *solidus*, sp. n., p. 102.
 6 (1) Last joint of the antenna almost as
 long as it is broad *varicolor*, sp. n., p. 103.

68. *Petaloscelis instabilis*.

Petaloscelis instabilis, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 283.

Bright orange, with the median part of the head sometimes dark, a small transverse black patch at the middle of the front margin of the pronotum, a larger one at the middle of the hind margin and sometimes a lateral spot of the same colour on each side. The elytra are black, with a common \times -shaped orange mark at the

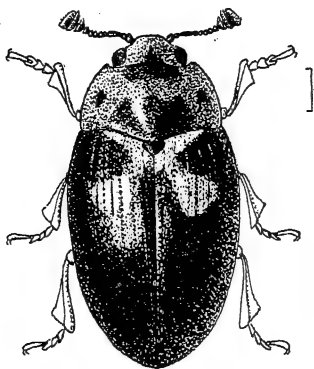


Fig. 20.—*Petaloscelis instabilis*.

base, extending backwards rather less than half their length, and sometimes also a common transverse band at two-thirds of their length curving forwards a little at the ends. The club of the antenna is dark-coloured. In a dark specimen the four black thoracic marks have united, so that the greater part of the pronotum is black, and the lower surface of the body is also dark. In a pale specimen the dark pigment is reduced and nearly the whole anterior half of the elytra is yellow.

Oval, convex, smooth and shining, with very stout legs and antennæ. The head and pronotum are finely and evenly punctured, the clypeus deeply emarginate in front and the eyes small and separated by an interval equal to about four times their radius. The sides of the pronotum are evenly rounded, the front angles nearly right angles and the hind angles obtuse. The scutellum is rather transverse and obtusely angular behind. The elytra are deeply striated, with strongly-impressed punctures in the striæ, and the intervals are finely punctured. The metasternum is finely punctured in the middle, with coxal lines running

parallel to its hind margin, and the sides and episterna are very coarsely pitted. The abdomen is finely and closely punctured, and the basal sternite bears short oblique coxal lines.

Length, 5·5–6 mm.; *breadth*, 3–3·5 mm.

BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.); Lashio, 3000 ft. (*T. Bainbrigge Fletcher*, Aug.).

Type in the Genoa Museum; co-type in the British Museum.

69. *Petaloscelis similis*, sp. nov.

Yellow, with the pronotum, except at the sides, the elytra and the club of the antenna black.

Oval, not very convex, smooth and shining, with the legs and antennæ moderately short and stout. The head and pronotum are minutely and sparsely punctured, the eyes separated by about three times their radius, the sides of the pronotum gently rounded and all the angles blunt. The elytra bear strongly-impressed lines of close deep punctures, and the intervals are very minutely and sparsely punctured. The lower surface is very smooth, the prosternum is almost unpunctured, the front margin has a sharp point in the middle, the coxal lines are nearly straight and rather wide apart in front, the metasternum bears only a few punctures, very fine in the middle and larger at the sides, and the abdomen is scantily but distinctly punctured. The 3rd joint of the antenna is as long as the 4th and 5th together, the 7th and 8th are very short and transverse, and the club very broad and compact, the terminal joint about three times as wide as it is long. The last joint of the maxillary palpus is about one and a half times as broad as it is long.

Length, 4·5 mm.; *breadth*, 2·5 mm.

ASSAM VALLEY (*W. Doherty*).

Type in the British Museum.

This has the colouring, size and general appearance of *P. varicolor*, but the tibiæ are rather less stout and the antennæ are shorter and more compact.

70. *Petaloscelis solidus*, sp. nov.

Bright yellow, with the antennæ, except at the base, black, and very smooth and shining.

Oval, very convex, with the legs and antennæ very short and stout. The head is strongly and unevenly punctured, with the clypeus short, the eyes small and separated by more than four times their radius. The pronotum is very finely and sparingly punctured, with the lateral margins gently curved, all the angles rounded and the base sharply and narrowly lobed in the middle. The elytra bear rows of fine and not closely-set punctures, and the intervals are extremely finely and sparsely punctured. The prosternum is strongly punctured at the sides and smooth in the middle, the front margin is produced to a point in the middle, and the coxal lines are long and sinuous, meeting close to the front

margin. The mesosternum is very short and very finely punctured, the metasternum coarsely punctured at the sides and almost smooth in the middle, and the abdomen fairly strongly and closely, its sides coarsely, punctured. The 3rd joint of the antenna is almost as long as the three succeeding together, the 8th is very short and a little dilated, and the last three are very broad and compact. The terminal joint of the maxillary palpus is about twice as wide as it is long.

Length, 3.5 mm.; *breadth*, 2 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*); Madura (Budapest Museum).

Type in the British Museum.

71. *Petaloscelis varicolor*, sp. nov.

Yellow, with the eyes, the pronotum (with the exception of rather broad lateral margins), the scutellum and elytra and the club of the antenna black. A rather indefinite reddish patch is sometimes visible at the base of each elytron.

Oval, not very convex, very smooth and shining. The head is strongly and closely punctured, the clypeus is rather long and deeply excised at the front margin and the eyes are rather large and separated by an interval about three times their radius. The pronotum is distinctly and moderately closely punctured, with the lateral margins gently and evenly rounded, the angles slightly obtuse and the base feebly lobed in the middle. The scutellum is finely punctured and obtusely angled at the apex. The elytra are deeply sulcate, the sulci finely and closely punctured, and the intervals convex and very minutely and scantily punctured. The lower surface is sparingly punctured, the mesosternum rather broad, the metasternum almost smooth and the abdomen distinctly but not closely punctured. The antennæ are short and stout, the 3rd joint twice as long as the 4th, the club massive, oval and little shorter than the footstalk, with all its joints transverse, the terminal one obliquely emarginate. The last joint of the maxillary palpus is moderately large, transverse and triangular. The legs are stout and the tibiæ broad at the end.

Length, 4–5 mm.; *breadth*, 2.5 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

Genus *APOROTRITOMA*, nov.

TYPE, *A. jucunda*, sp. nov.

Range. United Provinces.

Oval in shape, with rather short but not stout legs and antennæ, the latter having a very short, broad and compact club of three strongly transverse joints, scarcely differing in width and the terminal one truncate at the end, the 3rd joint rather longer than the 4th and 5th together, the 8th very short, broad and cup-shaped, but much less broad than the three club joints. Head

with parallel stridulatory files. Eyes small, far apart and finely faceted. Clypeus very short. Submentum short. Mentum narrow and rectangular; ligula quadrate, straight in front; palpi stout, with the last joint oval. Maxilla not toothed, the lobes subequal, the last joint of the palpus semicircular. Mandible acutely bifid at the tip. Pronotum finely margined at the sides and base, with the angle-pores rudimentary. Prosternum with coxal lines meeting at an angle in front. Coxal lines of the metasternum short, those of the 1st ventral sternite rather long. Tibiæ dilating a little from base to extremity, tarsi rather narrow.

The very broad, compact and truncate antennal club, the triangular prosternal plate and the rudimentary angle-pores of the thorax clearly separate this from *Tritoma* and the allied genera.

Only two species are known, the second remaining still undescribed.

72. *Aporotritoma jucunda*, sp. nov. (Pl. I, fig. 6.)

Bright orange-yellow, with black markings consisting of a large round spot on each side of the middle line of the pronotum, adjoining the front margin and extending back to the middle, a basal stripe extending across both elytra, but not including the scutellum, and forming two rounded lobes behind upon each, a postmedian bar common to both elytra, trilobed in front but nearly straight at its hind margin, and a large subapical spot upon each elytron. These black markings may all unite in the region of the suture, and it is probable that at the other extreme of pigmentation specimens may occur in which they are resolved into nine detached spots. The middle of the metasternum also is generally black. The legs and antennæ are entirely pale.

Oval in shape, highly convex and very smooth and shining. The head and pronotum are moderately strongly and evenly punctured, the eyes small and far apart. The sides of the pronotum are well rounded, all the angles blunt, the angle-pores very minute and the base broadly lobed in the middle. The scutellum is scarcely transverse, acute at the apex and not contracted at the base. The elytra are strongly punctured in rows and the intervals are very minutely and rather sparingly punctured. The front coxal lines meet at an acute angle in front, those of the middle coxæ do not reach the middle of the metasternum, and those of the hind coxæ almost reach the hind margin of the basal sternite. The metasternum is finely punctured in the middle and very coarsely at the sides. The antennæ are short, joints 3, 4 and 5 elongate, but the 3rd longer than the other two together, 7 and 8 very short, and the last three very strongly transverse, the terminal one truncate and scarcely narrower than the preceding one. The last joint of the maxillary palpus is less than twice as wide as it is long. The tibiæ are not much dilated at the end, and the tarsi are narrow.

Length, 4–5 mm.; *breadth*, 2.5–3 mm.

UNITED PROVINCES: Kumaon, W. Almora Division (*H. G. Champion*, June); Kali Valley, 8000 ft. (*R. N. Parker*, July).
SIMLA HILLS: Gahan, 7000 ft. (*S. N. Chatterjee*, Sept.).

Genus **DACTYLOTRITOMA**, nov.

TYPE, *Triplax apicata*, Crotch.

Range. India, China, Japan.

Elongate in shape, with rather long and stout legs and antennæ, the former with the femora grooved to receive the tibiæ, the latter long but triangular and rather broad at the extremity, the front ones toothed but not hollowed at the end, the three basal joints of the tarsi rather broad. Antennæ with a large, flat, elongate club, composed of three close-fitting joints of equal width, the terminal one circular, the 3rd joint half as long again as the 2nd and 4th, the 4th to 8th progressively diminishing and the 8th broad and very short. Eyes of moderate size, far apart and finely faceted. Clypeus moderately long, gently emarginate in front, with sharp angles. Sides of the mouth forming large rounded plates. Head with a stridulatory file on each side of the posterior excision. Submentum short. Mentum elongate, slightly widening from base to front margin, with a long median carina. Ligula small, rounded in front. Labial palpi not very short, the last joint oval. Lobes of the maxilla very short, the outer one triangular, the palpi with the last joint three times as broad as long. Mandible produced and acutely bidentate at the tip. Pronotum margined at the sides and base, with well-developed angle-pores. Body beneath without coxal lines. Prosternum narrow between the coxæ, produced behind them and emarginate at the end. Mesosternum very small.

This new genus has many peculiar features. The Japanese *Triplax atricapilla*, Lewis, is a second species which must be referred to it.

73. *Dactylotritoma apicata*.

Triplax apicata, Crotch,* Cist. Ent. i, 1876, p. 467.

Bright orange, with the part of the head in front of the eyes, the eyes, legs, antennæ and the latter half of the elytra black. In some specimens the elytra are without the apical black patch, and in others it is indicated by a slight discoloration only.

Narrowly oval, not very convex, very smooth and shining. The clypeus is narrow and rather closely punctured, the forehead and vertex more finely and sparsely, and the eyes are small, prominent and widely separated. The pronotum is twice as wide at the base as its length in the middle, distinctly and rather unevenly punctured, its lateral edges are very feebly rounded, the front angles almost rectangular, the hind angles slightly obtuse, the four angle-pores large and conspicuous, and the base feebly lobed in the

middle and finely and completely margined. The scutellum is broad but sharply pointed at the apex, and the elytra bear longitudinal rows of well-marked punctures, stronger in the anterior part, with minute punctures in the intervals. The prothorax is coarsely punctured at the sides beneath, the metasternum rather finely and sparingly and the abdomen more strongly and closely. The antennæ are stout but not long and have a large and rather compactly-articulated club, the 9th and 10th joints are broad and transverse and the last is almost circular.

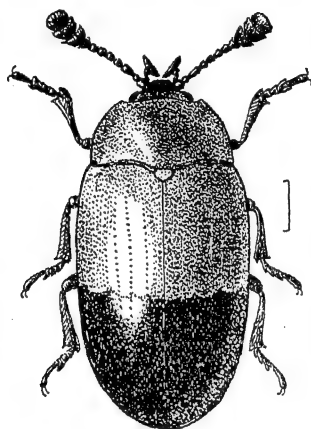


Fig. 21.—*Dactylotritoma apicata*.

The last joint of the maxillary palpus is about three times as broad as it is long.

Length, 5–8 mm.; *breadth*, 2.5–3.5 mm.

UNITED PROVINCES: Pindar Valley, 8000–11,000 ft., Kumaon, W. Almora Division (*H. G. Champion*, June–Sept.); Chaubattia, 6000–7000 ft. (*S. R. Archer*).

Type in the Cambridge University Museum.

Genus **CYRTOMORPHUS**.

Cyrtomorphus, Lacord., Mon. Erot. 1842, p. 240; Chap., Gen. Col. xii, 1876, p. 45; Kuhn, Deuts. Ent. Zeitschr. 1910, p. 235.

Type, *Cyrtomorphus pantherinus*, Lacord. (Java).

Range. The Indo-Malayan Region.

Hemispherical or broadly oval in shape and very smooth and shining, with moderately short antennæ and legs. Head small, deeply sunk in the prothorax. Pronotum with a small pore in each extreme angle. Second joint of the antenna small and globular, third very long and slender, the last three forming a narrow club, the terminal one very small and very closely fitting the preceding

one. Tibiæ rather broad; the three basal joints of the tarsi very broad and the penultimate joint very minute. Eyes not large nor prominent, finely faceted. Clypeus short, emarginate in front. Head furnished with a pair of stridulatory files placed one on each side of the deep occipital excision. Labrum prominent. Mandible very short, acutely bidentate at the tip. Maxilla with very short lobes, the last joint of the palpus large, twice as broad as it is long. Mentum narrow, a little dilated at the base, the elevated part forming an equilateral triangle. Ligula bilobed, short. Labial palpi short, with the last joint subglobose. Submentum narrow and rather long. Sides of the mouth forming flattened plates, beneath which are deep antennal grooves. Prosternum short, pointed in the middle of the anterior edge, broad and emarginate behind the coxæ. Mesosternum short and broad. Metasternum short, with broad episterna and large and well-marked epimera. First ventral segment moderately long, third very short.

In the male the inner edge of the middle tibia is provided with a series of minute tubercles, and the corresponding inner edge of the femur bears similar but much less closely-set tubercles.

The narrow and produced submentum, the peculiarly formed antennal club and the relatively very short 3rd ventral segment are peculiar to this genus.

Key to the Species of CYRTOMORPHUS.

- | | |
|---|---------------------------------------|
| 1 (14) Upper surface smooth and shining. | |
| 2 (7) Broad and subhemispherical in shape. | |
| 3 (4) Elytra paler than the remaining surface | <i>corallipennis</i> , Gorb., p. 108. |
| 4 (3) Uniformly coloured. | |
| 5 (6) Legs pale; 3rd joint of the antenna as long as the three following. | <i>curtus</i> , Gorb., p. 108. |
| 6 (5) Legs black; 3rd joint of the antenna as long as the two following | <i>nigripes</i> , sp. n., p. 109. |
| 7 (2) Oval in shape. | |
| 8 (9) Pronotum black, with pale spots. | <i>elegans</i> , sp. n., p. 110. |
| 9 (8) Pronotum pale, with black markings. | |
| 10 (13) Pronotum decorated with black spots. | |
| 11 (12) Pronotum decorated with four black spots | <i>connexus</i> , Gorb., p. 110. |
| 12 (11) Pronotum decorated with two black spots | <i>pardalinus</i> , Gorb., p. 111. |
| 13 (10) Pronotum decorated with a black stripe | <i>craticularis</i> , Gorb., p. 112. |
| 14 (1) Upper surface dull, densely punctured | <i>dux</i> , sp. n., p. 113. |

A species of *Cyrtomorphus* was given the name of *bengalensis* by Guérin through a mistake as to its habitat. It is really a native of Java.

74. *Cyrtomorphus corallipennis*.

Cyrtomorphus corallipennis, Gorh., * Ann. Mus. Civ. Genova, xxxvi, 1896, p. 283.

Black or brownish-black, with the elytra, the abdomen, the base of the antennæ and the palpi bright orange-red.

Very broadly oval, strongly convex and very smooth and shining. The head is rather strongly punctured, with the clypeus very short and emarginate in front, the eyes small, finely faceted and separated by about four times their radius. The pronotum is about two and a half times as broad as it is long, evenly but a little more finely and sparingly punctured, with the sides gently rounded, strongly convergent and very finely margined, all the angles sharp and rectangular and each occupied by a well-marked pore, and the base rather narrowly lobed in the middle. The scutellum is nearly semicircular in shape and very finely punctured. The elytra have longitudinal lines of fine punctures, with still finer punctures in the intervals, the sides are rounded from the shoulders to the apices, the former are not prominent and the latter are acute and conjointly rounded. The prosternum is sharply pointed in front, broadly produced and emarginate behind, the mesosternum is strongly transverse, the metasternum coarsely punctured, with an incised line running outwards very obliquely from the middle coxa on each side. The abdomen is finely punctured and clothed with minute yellowish setæ. The legs are not very short. The antennæ are slender, the third joint twice as long as the fourth and the terminal one very small.

♂. The male has fine close serration along the inner edge of the middle tibia and also a double row of less closely-set tubercles along the inner edge of each femur.

Length, 8.5 mm.; breadth, 6 mm.

BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.).

Type (♀) in the Genoa Museum; co-type (♂) in the British Museum.

The specimen described by Gorham (*l. c.*) as belonging to a variety of the species “totus rufescens, antennis nigris, basi rufis” is in reality a specimen of *C. curtus*, Gorh., which he failed to recognise on account of its size. *C. corallipennis*, in addition to its dark head and thorax, has a less hemispherical shape than *C. curtus*.

75. *Cyrtomorphus curtus*.

Cyrtomorphus curtus, Gorh., * Ann. Mus. Civ. Genova, xxxvi, 1896, p. 284.

Ferruginous-red, with the antennæ black (except the first three or four joints).

Nearly hemispherical, very convex, smooth and shining. The head is rather closely punctured, the clypeus deeply angularly emarginate, and the eyes are separated by about four times their radius. The pronotum is finely and evenly punctured, with the

sides scarcely rounded, the front angles prominent but blunt, the hind angles rectangular and the base gently lobed in the middle. The scutellum is nearly semicircular, and the elytra are evenly punctured, a little more strongly than the pronotum and without any distinct longitudinal lines; the shoulders are not prominent. The prosternum is pointed in front and broadly emarginate behind and the mesosternum and abdomen beneath are rather strongly punctured. The antennæ are rather long, with the 3rd joint a little flattened above and equal in length to the three following it, which are very slightly elongate, the 7th as long as it is broad, the 8th rather transverse, but not finely pubescent like the club, the 9th elongate and the last two forming together a compact oval, the 11th very small and nearly round, but projecting a little beyond the 10th.

♂. The inner edge of the middle tibia is serrated.

Length, 6-8 mm.; *breadth*, 4.5-6 mm.

BURMA: Karen Hills, 2700-3300 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum.

76. *Cyrtomorphus nigripes*, sp. nov.

Cyrtomorphus curtus, Arrow, Trans. Ent. Soc. Lond. 1922, p. 306.

Ferruginous-red, with the legs and antennæ black.

Very broadly oval, strongly convex, smooth and shining. The head is strongly punctured, with the clypeus gently, not angularly, emarginate at the front margin, and the eyes rather large and separated by about three times their radius. The pronotum is finely and evenly punctured, with the sides gently rounded, the front angles prominent but blunt, the hind angles sharply rectangular and the base well lobed in the middle. The scutellum forms a large part of a circle and is scarcely visibly angulated behind. The elytra are very finely but evenly punctured, some of the punctures forming inconspicuous lines. The prosternum is pointed in front and broadly emarginate behind, the mesosternum is short and broad, and the metasternum and abdomen beneath are rather strongly punctured. The antennæ are stout, the 3rd joint as long as the 4th and 5th together, the 4th, 5th, and 6th elongate, the 7th as long as wide, the 8th transverse, the last three forming a compact oval club about twice as long as it is wide, the 10th and 11th together nearly round.

Length, 6.5 mm.; *breadth*, 5 mm.

ASSAM: Sylhet, Chandkhira (*J. L. Sherwill*). INDO-CHINA: Luang Prabang (*R. Vitalis de Salvaza*).

Type in the British Museum.

This is a rather less hemispherical insect than *C. curtus*, Gorh., and its legs are dark. The antennæ are stouter and have a rather less long and narrow club, and the five joints interposed between the club and the slender third joint are larger and collectively longer than in Gorham's species, whose name I incorrectly applied to this insect in 1922.

77. *Cyrtomorphus elegans*, sp. nov.

Black, with the head narrowly yellow at the sides, the pronotum decorated with a small yellow spot in the middle and a larger rectangular one occupying each front angle, and each elytron decorated with a basal patch, reaching the outer margin and extending from the front margin to a little before the middle, deeply and almost circularly excised at the humeral angle and again at the middle of its inner margin, and an irregular ante-apical lunule, all of the same bright yellow colour. The basal part of the antenna, the terminal part of the tarsus and the abdomen are also pale.

Rather broadly oval, convex, smooth and shining. The head is strongly punctured, with the eyes separated by about three times their radius and the clypeus rather narrow, with straight converging sides and strongly excised front margin. The pronotum is more than twice as wide as it is long, evenly and fairly closely, but a little less strongly, punctured, rather more finely in the middle, with the sides feebly rounded, the front angles bluntly prominent, the hind angles rectangular. The scutellum is almost semicircular and well punctured. The elytra bear lines of fairly large but not close punctures and the intervals contain rather smaller scattered punctures. The lower surface is shining but well punctured, the abdomen rather closely punctured, and the coxal lines upon metasternum and abdomen are very short. The three joints of the antennal club are strongly transverse.

Length, 7 mm.; breadth, 4.5 mm.

BURMA: Sumprabum, Putao District (*Bernard Fischer*).

Type in the British Museum.

Four specimens have been presented by Mr. J. E. Black.

The elytral pattern is almost identical with that of the following species, *C. connexus*, but with a shorter and less arched subapical lunule. The light-coloured portions of the pronotum are very much reduced and the insect is rather smaller and relatively shorter.

78. *Cyrtomorphus connexus*.

Cyrtomorphus connexus, Gorb.,* Ann. Mus. Civ. (Genova, xxxvi, 1896, p. 286.

Bright yellow, with the head, antennæ (except the club) and tarsi reddish-yellow and with a black median spot upon the head, two small black spots at the front margin of the pronotum, another pair, larger and placed farther apart, at the hind margin, the scutellum, the elytral suture, a spot in each humeral angle, one a little farther back united with the sutural stripe, a complete irregular transverse median band and a lunule in the apical angle united with the first sutural stripe, are also black. The club of the antenna (except the extreme tip) and the greater

part of the femora, tibiae and lower surface of the body are of the same colour.

Oval, moderately convex and very smooth and shining. The head is rather strongly and closely punctured, with the clypeus rather deeply emarginate and the eyes separated by about three times their radius. The pronotum is similarly but a little more finely punctured, with the sides gently and evenly rounded, the front angles produced but blunt, the hind angles sharply rectangular, and the base finely margined, with a truncate lobe before the scutellum. The scutellum is punctured and almost

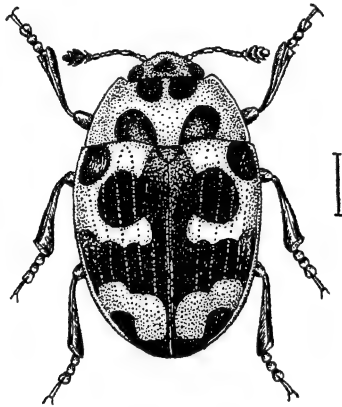


Fig. 22.—*Cyrtomorphus connexus*.

semicircular. The elytra bear well-marked lines of punctures and the intervals are very finely punctured; their greatest breadth is a little behind the shoulders, which are not prominent, but the humeral calli are rather protuberant. The three joints of the antennal club are strongly transverse, the last one small.

Length, 8 mm.; *breadth*, 5 mm.

BURMA: Karen Hills, Asciuii Cheba, 3600–3900 ft. (*L. Fea*, Jan.).

Type in the Genoa Museum.

I have seen only the unique type-specimen. It is possible that the black markings are sometimes less united than in this specimen.

79. *Cyrtomorphus pardalinus*.

Cyrtomorphus pardalinus, Gorb.,* *Ann. Mus. Civ. Genova*, xxxvi, 1896, p. 285.

Bright yellow, with a black spot upon each side of the middle line of the pronotum, touching the front margin and extending a little beyond the middle, a large roundish spot at the middle of the elytral suture and four rather smaller ones upon each elytron,

two placed at the front margin, one near the outer margin, in line with the sutural spot, and one in the apical angle, also black. The sutural spot sometimes unites with the spot on each side, forming an irregular transverse band. The head, legs and lower surface are of a rather deeper yellow colour than the upper surface, and the club of the antenna is dark.

Shortly oval in shape, convex and very smooth and shining, with the legs short, the tibiæ broad at the end and the tarsi rather narrow. The club of the antenna is loosely articulated and not long. The head is rather closely punctured, with the clypeus strongly excised in front and the eyes widely separated. The pronotum is similarly punctured in the middle, more finely at the sides, more than twice as broad as it is long, with the sides gently and evenly rounded, the front angles sharp, the hind angles slightly obtuse and the base rather strongly lobed in the middle. The scutellum is cordiform. The elytra have rows of strong and not close punctures and the intervals are very minutely punctured. The metasternum is rather finely punctured and has a gently bisinuate incised line running obliquely from the coxa to each side. The abdomen is rather strongly punctured and the first sternite has a similar incised line on each side.

Length, 5-6.5 mm.; *breadth*, 3.5-4 mm.

BURMA: Karen Hills, Cheba, 1200-2700 ft. (*L. Fea*, April). TENASSERIM: Meekalau, 1500-3600 ft. (*L. Fea*, March). JAVA. BORNEO.

Type in the Genoa Museum; co-type in the British Museum.

80. *Cyrtomorphus craticularis*.

Cyrtomorphus craticularis, Gorb.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 285.

Bright yellow, with a longitudinal median stripe upon the pronotum, dilating a little at the front and hind margins, the scutellum and the elytra black. Each elytron is decorated with three yellow patches, one transversely oval before the middle, reaching the outer but not the inner margin, a similar one behind the middle and a smaller patch in the apical angle. The eyes and the club of the antenna (except the extreme tip) are also black. The head, legs and lower surface are of a deeper yellow than that of the pronotum and elytra.

Oval, convex, smooth and shining. The head is moderately punctured, the clypeus deeply emarginate, and the eyes are divided by four times their radius. The pronotum is short, finely but rather evenly punctured, with the lateral margins gently and uniformly curved, the front angles slightly acute, the hind angles slightly obtuse and the base lobed in the middle. The scutellum is almost semicircular and very finely punctured. The elytra have rows of rather strong punctures and the intervals are extremely minutely and sparsely punctured. The tibiæ are rather

broadly dilated at the extremities. The club of the antenna is not very long, nor the terminal joint very small.

Length, 5–6 mm. ; *breadth*, 3·5–4 mm.

BURMA : Karen Hills, Cheba (*L. Fea*, April).

Type in the Genoa Museum ; co-type in the British Museum.

81. *Cyrtomorphus dux*, sp. nov. (Pl. I, fig. 5, ♂.)

Bright red, with a large double black patch at the base of the pronotum and sometimes covering the greater part of its surface, an irregular transverse patch placed before the middle of the elytral suture, a round spot just behind the middle of the base, a larger lateral spot behind the shoulder and an irregular transverse patch before the apex of each elytron. The scutellum, the middle of the metasternum and the extremities of the antennæ are also sometimes black.

Very broadly oval and convex, almost hemispherical, with the upper surface everywhere finely and densely punctured, the lower surface a little less closely and finely. The clypeus is straight in front and the eyes are small and separated by nearly four times their radius. The pronotum is about two and a half times as wide as it is long, with its sides gently rounded, the front angles a little blunted, the hind angles rather sharp and the base strongly lobed in the middle. The scutellum is sub-circular and scarcely angular at the apex. The elytra show feeble indications of longitudinal lines of punctures. The prothorax is almost unpunctured beneath, with the prosternal process broad and strongly emarginate behind. The 3rd joint of the antenna is almost equal in length to the three which follow it, the latter are slightly elongate, the 7th is about as wide as it is long, the 8th slightly transverse, and the last three form an oval club, of which the terminal joint is very small and scarcely projects beyond the 10th. The legs are fairly stout and the four anterior tibiæ a little curved.

♂. The middle tibia bears a row of minute tubercles at its inner edge.

Length, 9–11 mm. ; *breadth*, 7·5–8·5 mm.

SIKKIM : Nurbong (*W. K. Webb*). ASSAM : Tura, Garo Hills, 1200–1500 ft. (*S. Kemp*, July, Aug.).

Type in the British Museum ; co-type in the Calcutta Museum.

Genus NEOTRIPLAX.

Neotriplax, Lewis, Ann. Mag. Nat. Hist. (5) xx, 1887, p. 60.

TYPE, *Neotriplax atrata*, Lewis (Japan).

Range. Japan, N. India.

Oval and convex, with the legs rather long and stout and the antennæ short, with a broad, flat and compact club, composed of three rather close-fitting transverse joints, the terminal one oval

and little narrower than the two preceding; the 3rd joint as long as the two following together and the 8th shorter than broad. Head without stridulatory files. Eyes small, far apart and finely faceted. Clypeus moderately long, excised at the front margin. Submentum narrow and a little produced. Mentum quadrate, with a very prominent median lamina. Ligula narrow, with the front margin nearly straight; palpi contiguous, the last joint oval, slightly truncate. Maxillæ short, without teeth, the two lobes almost equal, the last joint of the palpus large, almost semicircular. Mandible very short and stout, sharply bidentate at the tip. Prothorax with well-developed angle-pores. Prosternum short and broad, emarginate behind, with very short coxal lines. Metasternum and first ventral sternite with moderately long coxal lines. Tibiæ dilating from base to extremity, broad and hollowed at the end. The three basal joints of the tarsi broad, progressively dilating, the 4th very minute.

The tarsi of the male are broader than those of the female and the elytra of the same sex are dull and opaque, or at least less shining, upon the posterior half.

82. *Neotriplax rubens*.

Erotylus rubens, Hope,* Gray's Zool. Misc. 1831, p. 31.

Amblyopus rubens, Crotch, Cist. Ent. i, 1876, p. 435.

Neotriplax rubens, Arrow, Ann. Mag. Nat. Hist. (8) iv, 1909, p. 196.

Bright chestnut-red, with the front of the head, the legs and antennæ black.

Broadly oval, convex, very smooth and shining. The head is finely punctured, a little more closely upon the clypeus, which is emarginate in front, and the eyes are very small, separated by about six times their radius. The pronotum is very finely punctured, with the front angles rather blunt, the hind angles rectangular and the base feebly lobed in the middle. The scutellum is almost semicircular. The elytra bear longitudinal lines of fine punctures, and the intervals are extremely minutely punctured. The 3rd joint of the antenna is twice as long as the 4th, and the club moderately large, with all the joints transverse, the 8th joint also transverse, but much narrower than the club. The prosternum is very broad, not pointed in front, gently sinuated behind, the mesosternum is short and broad, the metasternum very sparsely punctured and the abdomen rather closely. The tibiæ are fairly slender, but dilate regularly from base to extremity, and the tarsi are rather broad.

♂. The tarsi are distinctly broader than in the female and the elytra are less shining posteriorly than in front.

Length, 6-8.5 mm.; breadth, 3.5-5.5 mm.

NEPAL (*Gen. Hardwicke*). UNITED PROVINCES: Kumaon, W. Almora District (*H. G. Champion*). SIMLA HILLS: Kotgarh, Gahan, 7000 ft. (*S. N. Chatterjee*, Sept.). TONKIN: Mauson Hills (*Frühstorfer*, April, May).

Found in fungus at Kotgarh.

Type in the British Museum.

This is said by Crotch to be the same as *Amblyopus melanostomus*, Lac. (from Java), but, if so, the reputed locality of the latter must be incorrect.

Genus RHODOTRITOMA, nov.

TYPE, *Triplax coccinea*, Crotch.

Range. Northern India and Burma.

Oval and convex, with slender antennæ and rather long legs, the tibiæ broadest, but not very broad, at the end, the tarsi rather long and not much dilated, except in the male. Eyes small, far apart and finely faceted. Antennæ with the six or eight basal joints elongate, the 2nd short, the 3rd twice as long and the club 3-jointed and rather loose. Occipital region bearing a pair of stridulatory files, produced moderately far forward and not very wide apart. Mentum a little longer than wide and slightly contracted at the base; ligula narrow, feebly notched in the middle of the front margin; palpi short, the terminal joint semi-circular. Maxillary lobes extremely small and short, the outer one pear-shaped; palpi long, the terminal joint more than three times as broad as long. Mandible acutely bifid at the tip. Pronotum narrowly margined at the sides and base, the margin thickened in the angles and containing well-marked pores, the anterior edge bearing a narrow translucent membranous margin. Coxæ not very far apart. Prosternum flat, broad behind the coxæ, without converging lines in front of the coxæ. Mesosternum not broad. Metasternum and abdomen without coxal lines, the latter with a rather narrow intercoxal process.

The males have the legs rather stouter than those of the female, the tarsi rather broader and the antennæ longer. In some and probably all the species the femora have two rows of minute tubercles along the inner edge in the male.

Key to the Species of RHODOTRITOMA.

- | | | |
|----|---|--------------------------------------|
| 1 | (4) Club of the antenna narrow and loosely articulated. | |
| 2 | (3) Body red | <i>coccinea</i> , Crotch, p. 116. |
| 3 | (2) Body pale yellow | <i>nigripes</i> , Motsch., p. 117. |
| 4 | (1) Club of the antenna moderately broad and compact. | |
| 5 | (10) Antennæ black. | |
| 6 | (7) Legs pale | <i>nigricornis</i> , sp. n., p. 117. |
| 7 | (6) Legs black. | |
| 8 | (9) Body elongate-oval | <i>manipurica</i> , sp. n., p. 118. |
| 9 | (8) Body oval | <i>ovalis</i> , sp. n., p. 118. |
| 10 | (5) Entirely red, including the antennæ and legs | <i>sanguinea</i> , Crotch, p. 119. |

83. *Rhodotritoma coccinea*.

Triplax coccinea, Crotch,* Cist. Ent. i, 1876, p. 467.

Bright vermilion red, with the femora and tibiæ and parts of the antennæ black.

Oval, convex, moderately smooth and shining, with fairly slender antennæ and legs. The head and pronotum are fairly strongly and closely punctured and the eyes are small and divided by more than four times their radius. The pronotum is strongly convex, with its sides convergent, feebly rounded in front and

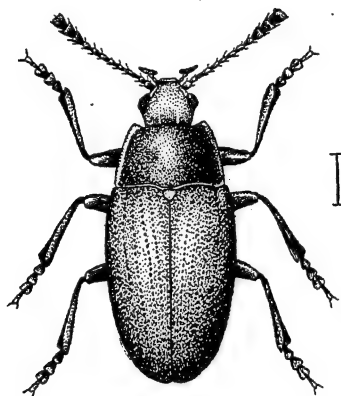


Fig. 23.—*Rhodotritoma coccinea*.

nearly straight behind, its front angles produced, but not sharp, and the hind angles nearly rectangular. The elytra bear regular rows of rather fine, close and deep punctures, with finer scattered punctures in the intervals. The prosternum is rather evenly punctured, the metasternum unevenly and very sparingly, but rather strongly, and the abdomen finely, and rather closely at the sides and extremity. The antennæ have usually the basal joint black, the 2nd red, and the remainder (except the 9th and 10th, which are wholly black) with the basal part black and the terminal part red. They are slender, with all but the penultimate joint elongate, the 3rd twice as long as the 2nd, the last three forming a loose narrow club. The joints of the tarsi also have usually the basal part black and the terminal part red. The terminal joint of the maxillary palpi is nearly four times as broad as it is long.

♂. The antennæ are very long, the legs longer than in the female, and the front femur has extremely minute tubercles in two rows along the inner edge.

Length, 5–6 mm.; *breadth*, 2.5–3 mm.

SIMLA HILLS; Gahan, 7000 ft., Baghi, 8500 ft., Narkanda,

9230 ft., Matiana, 7900 ft., Theog, 7600 ft., Kotgarh, 7000 ft. (*S. N. Chatterjee*, Sept.).

Taken from fungus.

Type in the Cambridge Museum.

84. *Rhodotritoma nigripes*.

Ischyrys nigripes, Motsch., *Etudes Ent.* vii, 1858, p. 116.

Pale yellow, with the antennæ and legs black, except the terminal part of the tarsi, which is red.

In all other respects this agrees with *R. coccinea*.

Length, 4.5–5.5 mm.; *breadth* 2.5–3 mm.

BURMA (according to Motschulsky).

Co-types (?) in the British Museum.

The British Museum contains four specimens, which I believe to have been sent by Motschulsky to E. W. Janson, A. Murray and F. Walker respectively. Two are labelled "India Orient." and the other two "Ceylon," the last probably a mistake of F. Walker's. Motschulsky appears to have received a number of specimens from Burma. This habitat and the much paler colour preclude its being treated as identical with *R. coccinea*, although I can find no structural difference, unless in a rather more attenuated terminal joint of the maxillary palpus. Our specimens are not in good condition.

85. *Rhodotritoma nigricornis*, sp. nov.

Orange-coloured above and beneath, including the legs, with the eyes and the antennæ (except at the base) black.

Elongate-oval, not very convex, rather strongly punctured. The head and pronotum are fairly closely and evenly punctured, the clypeus rather narrow, gently emarginate in front, the eyes prominent and separated by more than four times their radius. The sides of the pronotum are gently rounded, the front angles prominent and the hind angles nearly right angles. The scutellum is strongly transverse, a little contracted at the base and obtusely pointed behind. The elytra bear regular rows of rather large punctures, with well-marked but irregular and rather smaller punctures in the intervals. The prosternum and metasternum are strongly punctured at the sides and feebly in the middle and the abdomen is closely punctured beneath. The antennæ are moderately slender, joints 1 to 6 elongate, the 7th about as broad as it is long, the 8th transverse, but much narrower than the club. The terminal joint of the maxillary palpus is three times as wide as it is long. The legs are not very slender.

Length, 4 mm.; *breadth*, 2 mm.

SIKKIM: Mirik (*H. Stevens*, Oct.); Senchal Range, Darjeeling (*J. C. M. Gardner*, March). ASSAM: Kurseong, 5000 ft. (*H. Maxwell Lefroy*, Oct.).

From a fungus (*J. C. M. Gardner*).

Type in the British Museum.

86. *Rhodotritoma manipurica*, sp. nov.

Orange-yellow above and beneath, with the front edge of the clypeus, the antennæ and the legs black.

Elongate-oval, convex, smooth and shining, with slender legs and antennæ. The head and pronotum are lightly and sparingly punctured, the clypeus is rather narrow and gently emarginate in front, and the eyes are very prominent and separated by about four times their radius. The sides of the pronotum are straight behind and feebly rounded in front, the front angles are produced and the hind angles rectangular. The scutellum is sharply angular behind and not contracted in front. The elytra bear regular rows of rather fine punctures, with very fine and scanty punctures in the intervals. The lower surface is very sparsely punctured and the punctures are extremely fine except at the sides. The antennæ are long and slender, the first eight joints markedly elongate but the 3rd much longer than the rest, the 8th rather triangular and the last three transverse. The last joint of the maxillary palpus is about five times as broad as it is long.

Length, 7 mm.; *breadth*, 4 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum. There are two specimens.

87. *Rhodotritoma ovalis*, sp. nov.

Orange-coloured above and beneath, with the legs, the antennæ (except at the base), the eyes and organs of the mouth black.

Oval, not elongate, moderately convex and very smooth and shining, with the legs and antennæ rather short and the former stout. The head is well punctured, with the eyes prominent and divided by about four times their radius. The pronotum is very finely and sparsely punctured, its sides are strongly rounded, the front angles prominent and the hind angles rectangular. The scutellum is nearly semicircular but sharply pointed behind. The elytra bear regular rows of rather fine and shallow punctures and the intervals are very minutely and sparingly punctured. The prosternum is strongly punctured, the metasternum strongly at the sides and very finely and sparsely in the middle, and the abdomen rather strongly and closely. The antennæ are short but slender, with the 2nd joint oval, the 3rd very little longer than the 4th, the 8th a little longer than it is broad, the last three very compactly articulated and the last two strongly transverse. The terminal joint of the maxillary palpus is about five times as wide as it is long.

♂. The front femur has a double series of minute tubercles along its anterior edge.

Length, 4.5 mm.; *breadth*, 3 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

88. *Rhodotritoma sanguinea*.

Triplax sanguinea, Crotch,* Cist. Ent. i., 1876, p. 468.

Entirely orange-red or vermilion above and beneath, except the eyes, which are black.

Elongate-oval, moderately convex, very smooth and shining. The head and pronotum are rather deeply and moderately closely punctured, the eyes separated by more than four times their radius. The sides of the pronotum are very feebly rounded, the front angles acute, the hind angles right angles and the base broadly lobed in the middle. The scutellum is pentagonal, not transverse, and rather sharply pointed. The elytra are rather strongly punctured in rows, the intervals having each a median series of finer and more irregular punctures. The prosternum is without lateral striæ, the mesosternum is not very wide, the metasternum is finely punctured in the middle, rather more strongly at the sides, the abdomen finely and closely punctured beneath. The antennæ are rather short, joints 1 to 6 are elongate, 3 a little longer than the rest, the last three forming a fairly broad, closely-articulated club, 9 and 10 transverse and 11 circular. The last joint of the maxillary palpus is large and strongly transverse. The legs are fairly stout and the tibiæ are moderately dilated at the end.

Length, 4–6 mm.; breadth, 2–3 mm.

UNITED PROVINCES: W. Almora, Kumaon (*H. G. Champion*).
SIMLA HILLS: Kotgarh, 7000 ft., Matiana, 7000 ft., Fagu, 8000 ft. (*S. N. Chatterjee*, Sept.).

Taken by Mr. Chatterjee from a fungus.

Type in the Cambridge University Museum.

The following species may perhaps belong also to the genus *Rhodotritoma*, but the description affords no means of deciding, and the type is no longer extant.

Ischyrys flavus, Motsch., Etudes Ent. vii, 1858, p. 116.

"Another species very similar in size, form and colour has the legs entirely testaceous, the body more parallel, especially near the thorax, and stronger and closer puncturation upon the latter. I have called it *Ischyrys flavus*, and it occurs with the preceding" (i. e. *Rhodotritoma nigripes*, Motsch., from Burma).

Genus TRITOMA.

Tritoma, F., Syst. Ent. 1775, p. 570; Lacord., Mon. Erot. 1842, p. 218; Chap., Gen. Col. xii, 1876, p. 43; Arrow, Trans. Ent. Soc. Lond. 1921 (1922), p. 300.

Triplax, Herbst, Natursyst. Ins. v, 1793, p. 146; Payk., Fauna Suec. iii, 1800, p. 346; Lacord., Mon. Erot., 1842, p. 202. (Type, *Silpha russica*, L.)

Cyrtotriplax, Crotch, Ent. Month. Mag. ix, 1872, p. 189. (Type, *Tritoma bipustulata*, F.)

Pseudotritoma, Gorh., Notes Leyd. Mus. x, 1888, p. 147. (Type, *Tritomidea nigrocruciata*, Crotch.)

- Motrita*, Westw., Tijds. Ent. xxvi, 1883, p. 77. (Type, *M. fulvipes*, Westw.)
Triplacidea, Gorb., Stett. Ent. Zeit. lxii, 1901, p. 191. (Type, *Triplax motschulskyi*, Bedel.)
Ortitma, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 27. (Type, *Triplax nigripennis* Motsch.)
Trimota, Heller, l. c. (Type, *Trimota apicalis*, Heller.)

TYPE, *T. bipustulata*, F. (Europe).

Range. The whole world, except the Papuan and Australian regions.

The form varies from elongate-oval to almost hemispherical. The size is small, frequently very small, and the species generally show brightly contrasted colours and patterns.

Legs rather stout, coxæ widely separated, femora thick, tibiæ more or less dilating from base to apex, the first three joints of the tarsi with flattened soles, progressively widening, the fourth joint minute, inserted near the base of the third and forming a basal knob to the slender fifth joint. Head provided with two longitudinal or slightly oblique stridulatory files placed rather far apart in the occipital region, the posterior end close to the occipital foramen and very finely microscopically ridged transversely. Eyes finely faceted, not large, generally small and widely separated. Clypeus generally very short and feebly emarginate in front. Antennæ very variable, sometimes rather slender, generally short, the 3rd joint longer than those preceding and succeeding it, generally twice as long, the club always three-jointed, sometimes long and very loose, more often oval in shape, never very flat or large. Sides of the mouth-cavity forming flat semicircular lobes, between which and the eye on each side is formed a deep groove for the antenna. Mandible short and stout, strongly rounded externally and acutely bifid at the tip. Maxillæ without teeth, the two lobes rather slender and not greatly differing in length, the terminal joint of the palpus strongly transverse, from two to five times as broad as it is long. Submentum short; mentum rectangular, hollowed anteriorly on each side, with a sharp dividing carina; ligula narrow; labial palpi almost contiguous, short, with the terminal joint more or less securiform. Pronotum broad, margined at the sides and sometimes at the base, the lateral margins nearly straight, the base more or less lobed in the middle, the front and hind angles generally blunt and always containing a small but distinct pore. Scutellum more or less transverse, triangular. Elytra closely fitted to the prothorax anteriorly and jointly rounded behind. Prosternum forming a broad slightly emarginate process behind the front coxæ, with tangential lines more or less diverging to the base, the anterior median part not flat. Mesosternum very short and broad. Metasternum and basal ventral segment with or without tangential lines and separated in the middle by a straight suture.

The two sexes are alike externally, but the males have sometimes broader tarsi than the females.

This genus comprises an enormous number of species, with a very variable external form but rather constant essential characters. Almost the two extremes are represented by two insects found in Great Britain and familiar under the names of *Cyrtotriplax bipustulata* and *Triplax russica*, the types of *Tritoma* and *Triplax* respectively. The latter is an oblong insect with very prominent eyes, long narrow clypeus and long antennæ, the last having a loose club; the former is very short and stout, with less prominent eyes, the clypeus short and the antennæ short, with a compact club. The two types are obviously widely separated and inevitably received different generic names, but the study of their allies in all parts of the world reveals that they are connected by a long series of intermediates, so that the dividing line becomes completely obliterated. Perris, in his 'Larves de Coléoptères,' 1877, p. 527, refers to the very close similarity both in structure and habits of these two insects. The Indian forms included here, although certainly only a fraction of those to be yet discovered, exhibit many of the links in transition, and sufficiently demonstrate the impossibility of retaining the various names which I have treated as synonyms above. *T. minima*, Kuhn (described as a *Cyrtomorphus*) is very nearly related to *T. bipustulata*, and *T. excellens* to *T. russica*, but *excellens* has a rather shorter form and slight reduction of all the other distinctive features. *T. laeicornis* is nearly allied to the last and shows a still further reduction in the length of the clypeus, but the antennæ are even more slender than those of *T. russica*. An important feature of all the species of the genus is the stridulatory apparatus (see fig. 6, H, p. 22), which has not been hitherto described. The microscopically-ridged files are of the usual type now known in so many groups, but are peculiarly placed, being situated so far back upon the head that they can only be seen when this is drawn right out of its cavity. The pores situated in each of the four angles of the pronotum, although not previously noticed, are also very constant, and characteristic.

It cannot be doubted that a very large number of species of this genus exist in the immense and varied forest-regions of India. Twenty-seven species were found by Mr. George Lewis in the much less diversified and extensive forests of Japan, probably only a fraction of those occurring there. The larvæ of *Tritoma* are found burrowing in *Boleti* upon the trunks of trees, from which, when full-fed, they drop to pupate beneath the ground.

Key to the Species of TRITOMA.

- 1 (22) Prothorax yellow, orange or red,
with the elytra entirely black
(greenish-black in *T. viridipennis*);
body usually rather depressed.
- 2 (13) Head black,

- 3 (6) Club of the antenna very long and loose, not oval.
- 4 (5) Legs black. *lavicornis*, sp. n., p. 123.
- 5 (4) Legs pale *excellens*, sp. n., p. 124.
- 6 (3) Club of the antenna oval.
- 7 (8) Elytra greenish-black *viridipennis*, sp. n., p. 131.
- 8 (7) Elytra black.
- 9 (10) Body short, pronotum strongly lobed at the base *lobicollis*, sp. n., p. 124.
- 10 (9) Body oblong-oval, not very short, pronotum not strongly lobed.
- 11 (12) Elytra with well-marked rows of punctures [p. 125.
motschulskyi, Bedel,
- 12 (11) Elytra without well-marked rows of punctures *nilgiria*, sp. n., p. 126.
- 13 (2) Head pale.
- 14 (15) Abdomen dark *recurrens*, sp. n., p. 127.
- 15 (14) Abdomen pale.
- 16 (19) Entirely pale beneath; club of the antenna dark.
- 17 (18) Elytra with very regular puncturation [p. 127.
nigripennis, Motsch.,
- 18 (17) Elytra without regular puncturation *cingalensis*, Gorb., p. 128.
- 19 (16) Metasternum black.
- 20 (21) Body short; club of the antenna pale *prævia*, Gorb., p. 129.
- 21 (20) Body long; club of the antenna dark. *indica*, Crotch, p. 129.
- 22 (1) Not yellow or red (prothorax) and black or dark (elytra).
- 23 (28) Body entirely black above.
- 24 (27) Body entirely black beneath.
- 25 (26) Legs pale *obscura*, Gorb., p. 130.
- 26 (25) Legs dark *digitalis*, sp. n., p. 130.
- 27 (24) Body not entirely black beneath .. *lugubris*, Motsch., p. 141.
- 28 (23) Body not entirely black above.
- 29 (30) Pronotum entirely black *scutigera*, sp. n., p. 140.
- 30 (29) Pronotum not entirely black; body generally very convex.
- 31 (36) Thorax and elytra uniformly yellow or red.
- 32 (33) Head yellow or red *minima*, Kuhnt, p. 131.
- 33 (32) Head black.
- 34 (35) Less convex; last joint of the antenna not transverse *melanopa*, sp. n., p. 132.
- 35 (34) More convex; last joint of the antenna distinctly transverse *aurantiaca*, sp. n., p. 133.
- 36 (31) Thorax and elytra not both uniformly yellow or red.
- 37 (42) Pronotum and elytra decorated with black spots.
- 38 (39) Pronotum with two black spots *eximia*, sp. n., p. 133.
- 39 (38) Pronotum with more than two black spots.
- 40 (41) Elytral spots in two transverse rows. *infanta*, sp. n., p. 135.

- 41 (40) Elytral spots not in two transverse rows [p. 134.
duodecimnotata, Gorh.,
- 42 (37) Pronotum and elytra not both black-spotted.
- 43 (48) Elytra decorated with a pale transverse band.
- 44 (45) Pronotum entirely pale *cincta*, sp. n., p. 135.
- 45 (44) Pronotum black-spotted.
- 46 (47) Thoracic spots in the middle (transverse) line [p. 136.
unifasciata, Motsch.,
- 47 (46) Thoracic spots at the anterior margin *felix*, sp. n., p. 137.
- 48 (43) Elytra not transversely banded.
- 49 (50) Elytra with a black sutural mark .. *nigropicta*, sp. n., p. 137.
- 50 (49) Elytra with black border.
- 51 (52) Black elytral border placed at the anterior margin *nigribasis*, sp. n., p. 138.
- 52 (51) Black elytral border lateral *lobisternum*, sp. n., p. 139.

Tritoma quadrimaculata, Motsch. (p. 141) and *T. cyanipennis*, Motsch. (p. 141), known to me only from description, are not included in the above key.

89. *Tritoma laxicornis*, sp. nov.

Black and shining, with the prothorax above and beneath, except two minute adjacent black dots at the front dorsal margin in the middle and two similar ones at the hind margin, and the abdomen bright orange-yellow. The second joint of the antenna and the tips of the succeeding two are also pale.

It is oblong-oval in shape and only moderately convex. The head is rather strongly punctured, with the clypeus rugose and the eyes small. The pronotum is finely punctured, with its sides feebly curved, the front angles blunt, the hind angles nearly rectangular and their pores transverse and rather large, and the base completely and finely margined. The scutellum is transverse, finely punctured, obtusely angulate at the apex and not contracted at the base. The elytra bear regular rows of rather fine punctures, with similar punctures in the intervals, rendering the rows inconspicuous. The prosternal process is slightly emarginate behind and the mesosternum and the sides of the metasternum are coarsely punctured. The legs are stout and the tibiæ rather broad at the ends. The antennæ are slender, all but the penultimate joint elongate, the 2nd oval, the 3rd not quite as long, the 4th to the 8th regularly diminishing, the last three forming a very loose narrow club, with the terminal joint oval.

Length, 5-6 mm.; *breadth*, 3-4 mm.

SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*, Oct.).

Found in dead wood.

Type in the British Museum.

90. *Tritoma excellens*, sp. nov.

Black and shining, with the prothorax above and beneath, the abdomen, legs and antennæ (except the club and two or three preceding joints) orange-red.

Oblong-oval and moderately convex. The head is rather strongly punctured, and the eyes are small and separated by more than four times their radius. The pronotum is rather closely punctured, with its sides gently curved, the front angles a little produced and the hind angles nearly quadrate, with rather large transverse pores. The base is finely margined and very feebly lobed in the middle. The scutellum is transverse, feebly punctured, obtusely angular at the apex and not contracted at the base. The elytra bear regular rows of punctures, with finer scattered punctures in the intervals. The prosternal process is slightly emarginate behind, and the metasternum and abdomen are rather finely and closely punctured. The legs are stout and the tibiæ rather broad at the ends. The antennæ are slender, the 2nd joint oval, the 3rd half as long again, the 4th to 8th elongate but successively diminishing, and the three club-joints loosely articulated and about as broad as they are long. The last joint of the maxillary palpus is nearly three times as broad as it is long.

♂. The legs are distinctly stouter than those of the female, the tibiæ broader at the extremities and the front and middle tarsi very broad.

Length, 5-6 mm.; *breadth*, 3 mm.

N.W. FRONTIER PROVINCE: Hazara District, Dungagali, 8000 ft. (*T. Bainbrigge Fletcher*, May). KASHMIR (*Rost*).

Type in the British Museum.

Although extremely like *T. lawicornis*, it seems improbable that this will prove to be a variety of it. In addition to the pale legs and antennæ and the absence of the small black spots upon the pronotum, the puncturation is a little stronger in the present form. The localities of the two are very widely separated, and there is no indication of any transition in the three specimens of each form examined.

91. *Tritoma lobicollis*, sp. nov.

Yellow, with the head, elytra, mesosternum and metasternum and the club of the antenna black.

Broadly oval, moderately convex, very smooth and shining, with the legs not very stout. The head and pronotum are finely and sparingly punctured, the clypeus is gently emarginate in front and the eyes are very prominent and divided by about three and a half times their radius. The pronotum is broad, with its sides gently rounded, the front angles bluntly prominent, the hind angles obtuse and the base strongly and narrowly lobed in the middle. The elytra bear regular rows of punctures, which are strong and deep on the outer half and finer and more lightly

impressed on the inner half. The prosternum is almost unpunctured, its front margin forms a sharp point in the middle, and the coxal lines are strongly convergent and nearly straight. The metasternum is very minutely and sparsely punctured in the middle and strongly at the sides, and the abdomen is fairly strongly, closely and evenly punctured. The 3rd joint of the antenna is equal in length to the two following, the 4th to the

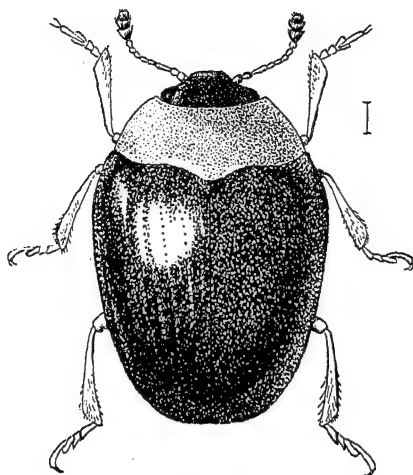


Fig. 24.—*Tritoma lobicollis*.

7th are subequal in length, the 8th short and the last three form a compact oval club. The terminal joint of the maxillary palpus is about twice as wide as it is long.

Length, 3.5 mm.; *breadth*, 2.5 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

The rather strong posterior lobe of the pronotum distinguishes this from any other species known to me.

92. *Tritoma motschulskyi*.

Triplax motschulskyi, Bedel, Ann. Soc. Ent. France, ser. 6, ii, 1872, p. 408.

Triplax melanocephalus, Motsch. (*nec* Latr.), Etudes Ent. viii, 1859, p. 107.

Cyrtotriplax oppositipunctata, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 228.

Trimota oppositipunctata, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 43.

Bright yellow, with the head, scutellum, elytra, a small transverse patch in the middle of the front margin of the pronotum

and a similar one in the middle of the hind margin, the club of the antenna (except the tip) and usually the meso- and metasternum, black.

Oval, not very convex, very smooth and shining. The head is strongly and closely punctured, with the eyes large and separated by barely four times their radius. The pronotum is distinctly but less closely punctured, with the sides very feebly curved, the angles right angles, the base finely margined and feebly lobed in the middle. The scutellum is broad at the base and very obtusely angled. The elytra bear longitudinal rows of strong punctures and the intervals are much more finely punctured. The entire lower surface is well punctured, the prosternum broad behind the coxæ, the metasternum strongly punctured and the abdomen finely and densely, the basal segment forming a narrow intercoxal lobe. The 3rd joint of the antenna is nearly as long as the two following together and the club is oval but not compact, the 9th and 10th joints strongly transverse and the last almost round. The last joint of the maxillary palpus is extremely long and narrow. The legs are short, the tibiæ short and broad at the end.

Length, 3-4.5 mm.; *breadth*, 2-2.5 mm.

TENASSERIM: Meekalan and Kyeat, 3000-4000 ft. (*L. Fea*, March). SIMLA HILLS: Kotgarh, 7000 ft. (*S. N. Chatterjee*, Sept.). CEYLON: Dikoya, 3800-4200 ft. (*G. Lewis*, Dec., Jan.).

Type of Motschulsky probably lost; that of *oppositipunctata* in the Genoa Museum, co-type in the British Museum.

93. *Tritoma nilgiria*, sp. nov.

Pale yellow, with the head (above), elytra and antennal club black.

Oblong-oval, not very convex, moderately smooth and shining, with short legs and antennæ. The head and pronotum are fairly strongly and closely punctured. The latter is two and a half times as wide as it is long, its sides are gently rounded in front, the front angles blunt, the hind angles rectangular, the base finely margined and feebly lobed. The scutellum is nearly semicircular. The elytra are finely punctured in rows, and the intervals are very minutely and sparsely punctured. The episterna of the prothorax are broad and a little hollowed. The prosternum, metasternum and abdomen are strongly, and at the sides rather closely, punctured, and the basal sternite of the abdomen has well-marked tangential lines. The tibiæ are triangular and broad at the extremities. The 3rd joint of the antenna is not quite as long as the 4th and 5th together, the 8th is short, and the last three form an elongate-oval, not compact, club, the 9th and 10th transverse and the 11th nearly round. The last joint of the maxillary palpus is four times as broad as it is long.

Length, 4.5-5 mm.; *breadth*, 2.5 mm.

S. INDIA: Nilgiri Hills (*Sir G. F. Hampson*).

Type in the British Museum.

This insect and *T. excellens* have a close resemblance to the European *T. collaris*, Schall., but, besides being rather larger, are distinguished by the loosely-jointed antennal club and the colouring of the lower surface of the body.

94. *Tritoma recurrens*, sp. nov.

Bright yellow, with the eyes, scutellum, elytra, metasternum and abdomen black. The antennæ and legs are wholly pale.

Elongate-oval, not very convex, very smooth and shining. The head is fairly strongly punctured, the pronotum very finely and sparsely, with the sides nearly straight, all the angles nearly right angles, and the base rather narrowly lobed in the middle. The scutellum is triangular, not very transverse, and the elytra bear regular rows of deep punctures, the intervals containing only a few scarcely perceptible punctures. The prosternum is broad behind, the mesosternum is sparingly but distinctly punctured at the sides, and the abdomen finely and not densely punctured beneath, the basal segment having a rather broad intercoxal process. The antennæ are short, with the 3rd joint very little longer than the 4th, the 4th to 8th short, the 9th to 11th forming a narrow, not very compact, club, joints 9 to 10 transverse and 11 nearly round. The last joint of the maxillary palpus is strongly transverse. The legs are stout and the tibiæ rather broad at the ends.

Length, 4 mm.; *breadth*, 2 mm.

UNITED PROVINCES: Kumaon, W. Almora (*H. G. Champion*, Feb.).

Type in the British Museum.

This new species closely resembles *T. indica*, Cr., but the third joint of the antennæ is distinctly shorter and the abdomen is dark. It is a little larger and more elongate than *T. prævia*, Gorb., in which also the abdomen is pale and the third antennal joint long. The present species has this joint little longer than the 4th, and the elytra are much more strongly and regularly punctured.

95. *Tritoma nigripennis*.

Triplax nigripennis, Motsch., *Etudes Ent.* vii, 1858, p. 114.

Cyrtotriplax cebana, Gorb.,* *Ann. Mus. Civ. Genova*, xxxvi, 1896, p. 287 (new syn.).

Ortilma cebana, Heller, *Arch. f. Nat.* lxxxiv, 1918 (1920), p. 43.

Bright orange-yellow, with the eyes, scutellum and elytra black, the pronotum with or without a longitudinal black median stripe, and the last five or six joints of the antenna dark.

Broadly oval, smooth and shining and not very convex. The head is finely and moderately closely punctured, the eyes separated by an interval four times as wide as their radius. The pronotum is similarly but a little more strongly and less closely punctured, with the lateral margins very feebly curved, the front angles almost rectangular, the hind angles obtuse and the base trisinate.

The scutellum is transverse and almost smooth. The elytra bear regular rows of closely-set distinct punctures, and the intervals are very minutely and scantily punctured. The prosternum is broadly produced and gently emarginate behind, the metasternum is very finely and scantily punctured, the abdomen a little more strongly, but not closely, and the basal sternite of the latter has a broad process between the hind coxæ. The antennæ are slender but short, the 3rd joint rather more than twice as long as the 4th, the 4th to 8th equal, 9th and 10th strongly transverse and very loosely connected, the last small and nearly round. The last joint of the maxillary palpus is very broadly triangular.

Length, 4.5 mm.; *breadth*, 3 mm.

UNITED PROVINCES: Kumaon, Ranikhet Division (*H. G. Champion*, July). ASSAM: Garo Hills, above Tura, 3500-3900 ft. (*S. Kemp*, July, Aug.). BURMA: Karen Hills, Cheba, 2700-3300 ft. (*L. Fea*, Dec.).

Type of Motschulsky probably lost; that of *cebana*, Gorh., in the Genoa Museum, co-type in the British Museum.

Three specimens were found in an agaric by Mr. H. G. Champion, one of them having the pronotum bright yellow, with a very slight smoky stain in the middle, another having a longitudinal black band, ill-defined at the edges, occupying its middle third, while the last has this band dilated to twice the width of the yellow margin, and a small black spot appears on the head between the eyes. The legs are invariably pale.

96. *Tritoma cingalensis*.

Triplacidea cingalensis, Gorh.,* Stett. Ent. Zeit. lxii, 1901, p. 192.

Bright yellow, with the eyes and the elytra black and the club of the antenna dark. The scutellum is sometimes red or almost black.

Rather broadly oval, not very convex, smooth and shining. The head is distinctly and rather closely punctured, the pronotum very finely and not very closely, the sides of the latter very feebly rounded, all the angles right angles and the base distinctly lobed in the middle. The scutellum is slightly transverse. The elytra bear not very strongly-marked lines of lightly-impressed punctures, the intervals a little more finely and not closely punctured. The prosternum is very broad behind, the metasternum is very finely punctured and the abdomen finely and densely, the basal sternite forming anteriorly a broad intercoxal process. The antennæ are short, the 3rd joint almost as long as the two following, the 4th to 8th joints very short and the last three transverse, forming a narrow club. The last joint of the maxillary palpus is very transverse, narrow and elongate. The legs are rather short and stout, the tibiæ moderately broad at the extremity.

Length, 3-4 mm.; *breadth*, 2-2.5 mm.

CEYLON: Colombo, coast level (*G. Lewis*, April); Kandy, 1546-1727 ft. (*G. Lewis*, Feb.). S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

97. *Tritoma prævica*.

Cyrtotriplax prævica, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 289.

Bright yellow, with the eyes, scutellum, elytra and metasternum black.

Small, broadly oval, not very convex, very smooth and shining. The head and pronotum are evenly and very finely punctured, the latter very transverse, with the sides nearly straight, the front angles slightly acute, the hind angles right angles and the base broadly lobed in the middle. The scutellum is moderately broad and obtusely angular. The elytra bear longitudinal rows of fine seriate punctures and the intervals bear similar punctures irregularly but evenly distributed. The prosternum is broad, a little dilated and nearly straight at its hind edge, the mesosternum is broad and strongly punctured, the metasternum rather scantily and the abdomen closely punctured, the basal sternite of the latter forming a moderately broad intercoxal process. The antennæ are short, with the 3rd joint nearly as long as the 4th and 5th together, the 4th to 8th short and bead-like, the 9th to 11th forming a rather narrow, not very closely-articulated, club, the 9th and 10th transverse and the 11th circular. The last joint of the maxillary palpus is strongly transverse. The legs are short and the tibiæ rather broad at the ends.

Length, 3 mm.; *breadth*, 2 mm.

BURMA: Bhamo (*L. Fea*, June).

Type in the Genoa Museum; co-type in the British Museum.

98. *Tritoma indica*.

Triplax indica, Crotch,* Cist. Ent. i, 1876, p. 467.

Bright yellow, with the eyes, the antennæ (except the three or four basal joints), the scutellum, elytra and metasternum black.

Elongate-oval, not very convex, very smooth and shining. The head and pronotum are deeply and distinctly punctured, the eyes very small and far apart, the sides of the pronotum gently rounded, the angles bluntly rectangular, the base feebly lobed in the middle. The scutellum is transverse and the elytra bear regular rows of moderately strong punctures, the intervals having each a single series of finer and less regular punctures. The lower surface is finely and closely punctured, except upon the metasternum, where the punctures are larger and less close. The mesosternum is rather narrow, and the basal segment of the abdomen forms a narrow intercoxal process. The 3rd joint of the antenna is nearly as long as the 4th and 5th together, and the last three form a narrow loosely-articulated club. The last joint of the maxillary palpus is very narrow and transversely elongate. The legs are moderately slender.

Length, 5 mm.; *breadth*, 2.5 mm.

INDIA.

Type in the Cambridge Museum of Zoology. I have seen only the single type-specimen.

99. *Tritoma obscura*.

Cyrtotriplar obscura, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 289.

Black, with the antennæ (except the club), the palpi, tibiæ, tarsi and the sides and extremity of the abdomen yellow.

Oval, not very convex, very smooth and shining. The head and pronotum are finely and evenly punctured, the eyes are not very small and are separated by a distance barely four times their radius. The lateral margins of the pronotum are feebly rounded, the angles right angles and the base gently lobed in the middle. The scutellum is broad, minutely punctured and obtuse at the apex. The elytra bear fine and regular but inconspicuous longitudinal lines of close and minute punctures, and the intervals are extremely finely, but closely and evenly, punctured. The entire lower surface is very finely and closely punctured, all the coxæ are widely separated, the prosternum is produced into a sharp point in front, and the metasternum is not emarginate between the hind coxæ, meeting the broad intercoxal process of the abdomen in a straight suture. The antennæ are slender but not long, the third joint is as long as the two following and the club narrow and loosely articulated, with the terminal joint pear-shaped. The last joint of the maxillary palpus is very long and narrow. The legs are slender and the tibiæ little dilated at the extremity.

Length, 3.5 mm.; *breadth*, 2.5 mm.

TENASSERIM: Meekalan and Kyeat, 1500–3600 ft. (*L. Fea*, March).

Type in the Genoa Museum; co-type in the British Museum.

100. *Tritoma digitalis*, sp. nov.

Shining black above and beneath, with the footstalk of the antenna, the palpi and the last joint of the tarsi yellow.

Oval and moderately convex, with the antennæ rather slender and the legs not stout. The head and pronotum are moderately finely punctured, with the clypeus gently emarginate in front and the eyes very prominent and divided by less than three times their radius. The lateral margins of the pronotum are almost straight, the front angles bluntly prominent, the hind angles obtuse and the base broadly lobed in the middle. The scutellum is almost semicircular and finely punctured. The elytra bear regular rows of fairly close punctures with rather finer but distinct punctures in the intervals. The prosternum bears only a very few punctures and the coxal carinæ are convergent, nearly straight but slightly incurved at both ends. The mesosternum is strongly punctured, the metasternum distinctly, but not coarsely or closely, and the abdomen rather coarsely and closely. The 3rd

joint of the antenna is about equal in length to the next two, which, with the 6th and 7th, are elongate, the 8th is scarcely elongate and the last three form a short oval club. The terminal joint of the maxillary palpus is about twice as broad as it is long.

Length, 5 mm.; *breadth*, 3 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

There are two specimens. It is a larger insect than *T. obscura*, Gorb., less finely and closely punctured, the club of the antenna is shorter and the tibiae are black.

101. *Tritoma viridipennis*, sp. nov.

Bright yellow, with the scutellum and elytra deep metallic green and the head, a narrow border at the middle of the anterior margin of the pronotum, a patch in the middle of the basal margin, the mesosternum and metasternum, the hind coxæ and the antennal club, black, partly with a very faint metallic lustre.

Elongate-oval, not very convex, smooth and shining, with fairly slender antennæ and legs. The head is strongly and fairly closely punctured and the eyes are separated by nearly four times their radius. The pronotum is similarly punctured at the sides and a little more sparingly in the middle; the lateral margins are almost straight, the front angles prominent and not very blunt, and the hind angles obtuse. The scutellum bears a few minute punctures and the elytra have rows of fine punctures, with scattered and not very much finer punctures in the intervals. The prosternum is coarsely punctured in front, where it is rather flat, more finely behind, the coxal lines are bisinuate and scarcely produced in front of the coxæ. The mesosternum is strongly and closely punctured, the metasternum very finely and sparsely in the middle and strongly at the sides, and the abdomen fairly closely and evenly. Joints 3 to 8 of the antenna are more or less elongate, the third about one and a half times as long as the 4th, the club not very compact, with the 9th joint as long as wide, the 10th transverse and the 11th oval. The terminal joint of the maxillary palpus is twice as broad as long.

Length, 3 mm.; *breadth*, 2 mm.

SIKKIM: Darjeeling, Gopaldhara (*H. Stevens*, Oct.).

Type in the British Museum. I have seen only a single specimen.

102. *Tritoma minima*.

Cyrtomorphus minimus, Kuhn*, Deutsche Ent. Zeitschr. 1910, p. 233.

Rusty-red, with the eyes and the club of the antenna black.

Broadly oval, highly convex and very smooth and shining above and beneath. The head and pronotum are finely and moderately closely punctured, but the lateral margins of the latter

are almost devoid of punctures. The clypeus is rather narrow, and the eyes are moderately small and far apart. The pronotum is about two and a half times as wide as it is long in the middle, gently rounded at the sides, with the front angles right angles, the hind angles very obtuse, and the base very finely and entirely margined and broadly lobed in the middle. The scutellum is smooth, bluntly angular behind and not very strongly transverse. The elytra bear longitudinal rows of fine but rather close and deep punctures, and the intervals bear still finer scattered punctures. The coxæ are far apart, the pro-, meso- and metasternum extremely finely and sparsely punctured, the abdomen a little less so. The antennæ are short and slight, with the 3rd joint as long as the 4th and 5th together, the 4th, 5th, and 6th slightly elongate, the 7th and 8th short, and the last three forming a loosely-articulated oval club, 9 and 10 strongly transverse and 11 rather narrow. The legs are rather short but not stout. The last joint of the maxillary palpus is rather more than twice as broad as it is long.

Length, 3 mm.; *breadth*, 4.5 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

The fact that an insect closely related, like the present one, to the familiar typical species of the genus *Tritoma* could be referred by its describer, the cataloguer of the family, to *Cyrtomorphus*, illustrates the difficulty of defining the genera of this group. The name given to the present species is peculiarly unfortunate.

103. *Tritoma melanopa*, sp. nov.

Orange, with the head above (except behind the eyes), the antennæ and legs black.

Broadly oval, moderately convex, very smooth and shining, with not very stout legs, and slender antennæ. The head is very lightly punctured, with the clypeus rather narrow and angularly emarginate in front and the eyes divided by about three times their radius. The pronotum is short, finely and sparingly punctured, with the lateral margins scarcely rounded, the front angles rather prominent, the hind angles very obtuse and the middle of the base forming a truncate lobe. The elytra bear rows of well-marked but rather shallow and not closely-set punctures, and the intervals contain extremely minute sparse punctures. The prosternum and mesosternum have only a very few punctures, and the former is drawn to a sharp point in the middle of the front margin and has a pair of convergent and nearly straight coxal carinæ. The metasternum is sparingly punctured, finely in the middle and coarsely at the sides, and the abdomen fairly strongly but not very closely. The 3rd joint of the antenna is about equal in length to the succeeding two, which, with the 6th, are elongate, the 7th is about as broad as long, the 8th transverse

and the last three form an oval club. The terminal joint of the maxillary palpus is about two and a half times as broad as it is long.

Length, 3.5 mm.; *breadth*, 5 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

I know only a single specimen. The coloration is that of species of *Rhodotritoma* and *Tetratritoma*, but the shape is much broader.

104. *Tritoma aurantiaca*, sp. nov.

Bright orange-coloured, with the head, antennæ and legs black.

Broadly oval, convex, smooth and shining, with short antennæ and moderately slender legs. The head and pronotum are distinctly and evenly punctured, the eyes separated by about three times their radius. The pronotum is not very broad, its lateral margins are feebly rounded, the front angles prominent but blunt and the hind angles obtuse. The scutellum is not broad. The elytra bear lines of closely-set punctures, with very minute sparse punctures in the intervals. The prosternum is short, bears only a very few minute punctures and the coxal lines are nearly straight, convergent but wide apart in front. The mesosternum is very broadly transverse and sparsely punctured, and the metasternum is finely, sparingly and irregularly punctured in the middle and rather coarsely and regularly at the sides. The abdomen is fairly closely punctured. The 3rd joint of the antenna is equal in length to the two succeeding, the 8th is very short and the last three are transverse, forming a rather broad club. The terminal joint of the maxillary palpus is twice as wide as it is long.

Length, 4 mm.; *breadth*, 3 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

A single specimen was taken by Doherty in the same locality as *T. melanopa*, to which it has the closest resemblance. The coloration is precisely the same, but it is more convex, the prothorax is less broad, the punctures of the elytra are more closely set and the club of the antenna is broader.

105. *Tritoma eximia*, sp. nov.

Bright red, with the club of the antenna, a small round spot near the base of the pronotum on each side and five similar spots on each elytron black, viz.—one near the suture just behind the scutellum, two placed transversely a little behind the first, the outer one adjoining the outer margin, one longitudinally in line with the first and behind the middle and one at the outer margin opposite the last.

Shortly oval, very convex, smooth and shining, with fairly stout legs. The head is moderately strongly and closely punctured, the clypeus broad and gently excised in front and the eyes are separated by about four times their radius. The pronotum is finely and sparingly punctured, with its sides gently rounded, the front angles bluntly produced, the hind angles obtuse and the base rather strongly lobed in the middle. The elytra are finely punctured, with not very well-marked rows of slightly larger punctures. The prosternum is strongly punctured at the sides and almost smooth in the middle, the front margin forms a sharp point in the middle, and the coxal lines are strongly convergent and almost straight. The metasternum is strongly and closely punctured at the sides and finely in the middle, and the abdomen is punctured everywhere. The 3rd joint of the antenna is about as long as the following three together, the 7th and 8th are a little thicker and the last three form a compact oval club. The terminal joint of the maxillary palpus is about twice as wide as long.

Length, 4.5 mm.; *breadth*, 3 mm.

ASSAM: Patkai Hills (*W. Doherty*).

Type in the British Museum. The type is unique.

106. *Tritoma duodecimnotata*.

Cyrtotriplax duodecimnotata, Gorrh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 287.

Bright reddish-orange, decorated above with twelve rather large round black spots, one placed on each side of the base of the pronotum and measuring about half the width of the latter, and a smaller one near the middle of the lateral margin, one occupying the shoulder of each elytron and almost reaching the front and lateral margins, a similar one behind the last and midway between it and the apex, one midway between the last two but near the suture, and one almost touching the suture placed between the last and the apex. The club of the antenna is dark.

Very shortly oval and highly convex, with the surface smooth and shining. The head is rather small, the eyes very small, far apart and finely faceted. The head and pronotum are finely but evenly punctured: the sides of the latter are almost straight and the angles almost right angles, the anterior ones rather produced; its base is lobed in the middle. The scutellum is triangular and about as long as it is wide. The elytra are everywhere finely punctured, some of the punctures being a little larger than the rest and arranged in longitudinal lines; the apical angles are sharply rectangular. The four anterior coxæ are far apart, the prosternum very broad behind, the mesosternum very short and transverse, the metasternum very finely punctured and the abdomen rather closely. The antennæ are very short and slender,

with a narrow three-jointed club, and the tibiæ are moderately dilated from base to extremity.

Length, 4 mm.; *breadth*, 3 mm. .

BURMA: Bhamo (*L. Fea*, July). ASSAM: Naga Hills (*W. Doherty*); Patkai Hills (*Doherty*).

Type in the Genoa Museum; co-type in the British Museum.

A specimen (in the British Museum) was taken by Doherty in the Patkai Hills in which the black pigment has overspread most of the head and the whole of the pronotum, except a narrow median red line and a minute red spot on each side. The apices of the elytra and the external and sutural margins are also black, and the legs and lower surface are very dark. Whether this specimen represents a closely-related species or merely a dark variety of *T. duodecimnotata* is not certain.

107. *Tritoma infanta*, sp. nov.

Bright red, with the club of the antenna dark and the upper surface decorated with eleven large oval black spots, viz.—one placed transversely at the middle of the base of the pronotum, one near each of the hind angles and four upon each elytron, two before the middle, near the inner and outer margin respectively, and two behind the middle in the corresponding positions.

Shortly oval, very convex, smooth and shining, with fairly short antennæ and legs. The head and pronotum are distinctly, not very closely, punctured, the eyes very prominent and separated by about three times their radius. The sides of the pronotum are very feebly rounded and all the angles blunt. The elytra bear regular rows of strong and deep punctures, not very closely set, and the intervals are very minutely and sparsely punctured. The prosternum and mesosternum are almost unpunctured, and the former has a pair of strongly convergent and nearly straight carinæ. The metasternum is finely and sparingly punctured except at the sides, where the punctures are rather large and close, and the abdomen is fairly coarsely but not very closely punctured. The 3rd joint of the antenna is about equal in length to the two succeeding joints, the 6th, 7th, and 8th are about as long as they are broad, and the last three form a moderately short oval club. The terminal joint of the maxillary palpus is about twice as broad as it is long.

Length, 3.5 mm.; *breadth*, 2 mm.

SIKKIM: Darjeeling, Gopaldhara, 4720 feet (*H. Stevens*, Oct.).

Type in the British Museum.

This resembles *T. duodecimnotata*, Gorh., but the black spots upon the elytra are placed in two straight lines and the punctuation is much more regular. The specimen is unique.

108. *Tritoma cincta*, sp. nov.

Bright yellow, with the elytra black and decorated with a yellow transverse band just behind the base, broad at the outer

margins, where it almost reaches the shoulders, and gradually tapering to the suture, where it is narrowly interrupted, and a fairly large terminal patch occupying about one-fifth of the length of the elytra. The club of the antenna and the metasternum and abdomen (except the anterior median part of the two last) are dark in the type-specimen, and these parts are probably sometimes black. The legs are bright yellow.

Narrowly oval, moderately convex, very smooth and shining, with rather stout legs. The head and pronotum are finely and sparingly punctured, the clypeus gently emarginate in front, the eyes divided by about four times their radius, the sides of the pronotum nearly straight and feebly convergent, the front angles very blunt and the hind angles very obtuse. The elytra bear well-marked rows of fairly close and strong punctures, with very minute sparse punctures in the intervals. The prosternum is almost devoid of punctures, its front margin has a sharp point in the middle and the coxal lines are strongly sinuous. The metasternum is finely punctured, more closely in the middle than at the sides, and the abdomen finely in the middle and a little more strongly at the side. The 3rd joint of the antenna is as long as the succeeding two, the 4th to the 7th are slightly elongate, the 8th short, and the last three form a narrow oval club. The terminal joint of the maxillary palpus is about two and a half times as wide as long. The front and middle tibiæ are very broad at the extremity and the hind tibia is more slender.

Length, 3.5 mm.; *breadth*, 2 mm.

TENASSERIM: Tavoy (*W. Doherty*).

Type in the British Museum. I have seen only one specimen.

109. *Tritoma unifasciata*.

Triplax unifasciata, Motsch., *Etudes Ent.* vii, 1858, p. 115.

Orange or bright red, with a large black spot occupying the middle of the anterior half of the pronotum and a smaller one on each side; the elytra, with the exception of an irregular median red band, extending from side to side and produced angularly backwards along the suture and forwards near the middle of each elytron, and the club of the antenna, black.

Rather narrowly oval, not very convex, very smooth and shining, with fairly long legs and antennæ. The head and pronotum are finely and rather evenly punctured, with the eyes small and separated by about five times their radius. The lateral margins of the prothorax are almost straight, feebly curved in front, with the front angles blunt and the hind angles rectangular. The elytra bear rows of fine and not very deep punctures, with finer irregular punctures in the intervals. The prosternum is finely and sparingly punctured, with the post-coxal process bilobed and the coxal lines not produced in front of the coxæ. The mesosternum is smooth, with a nearly semicircular undulating marginal line. The metasternum is extremely finely

and scantily punctured, and the abdomen less finely and more closely. The 3rd antennal joint is equal in length to the two following, the 8th is very short and the last three form a rather long narrow club, with the terminal joint nearly round. The last joint of the maxillary palpus is about one and a half times as wide as it is long.

Length, 3 mm.; *breadth*, 2 mm.

ASSAM: Naga Hills, Patkai Hills (*W. Doherty*).

Type unknown.

110. *Tritoma felix*, sp. nov.

Bright yellow, with the middle of the forehead, a patch at the middle of the front margin of the pronotum, bilobed behind and reaching beyond the middle of the pronotum, the elytra (except an irregular transverse bar before the middle, not quite extending to the inner and outer margins, and a triangular spot near the outer margin just before the apex, which are bright red) and the club of the antenna, except the terminal joint, black.

Broadly oval, moderately convex, smooth and shining, with the antennæ short and the legs not very stout. The head and pronotum are finely and evenly punctured, and the eyes small and separated by more than four times their radius. The sides of the prothorax are gently rounded, the front angles are a little produced, the hind angles obtuse and the base feebly lobed in the middle. The scutellum is smooth. The elytra bear distinct rows of fine punctures, not deeply impressed, and the intervals are very minutely punctured. The lower surface is smooth, very sparsely and minutely punctured. The prosternum bears short, straight and convergent coxal lines, the mesosternum is moderately closely punctured, and the metasternum and abdomen have a few moderately large punctures at the sides. The 3rd joint of the antenna is only a little longer than the 4th, the 8th is transverse, and the last three form an elongate-oval club, the 9th and 10th transverse and the last rather narrow.

Length, 4-5 mm.; *breadth*, 2.5-3 mm.

ASSAM: Garo Hills, above Tura, 2500 feet (*Mrs. S. Kemp*, Sept.).

Type in the British Museum; co-types in the Indian Museum, Calcutta.

111. *Tritoma nigropicta*, sp. nov.

Pale yellow, with the head (except a pale anterior patch bifurcate behind, the organs of the mouth and the base of the antennæ), legs and lower surface (except the sides of the prothorax and the abdomen) black, and decorated above with a narrow marginal black line at the base of the pronotum, a narrow black sutural line, dilating into a broad transversely oval patch before the middle and again behind it, a patch on the shoulder and one at the outer margin behind the middle also black.

Oval, very convex, smooth and shining, with rather stout legs and short antennæ. The head is fairly strongly punctured, and the eyes are divided by about three and a half times their radius. The pronotum is finely but not very sparsely punctured, with the sides very feebly rounded, the front angles not very prominent and the hind angles very obtuse. The elytra bear rows of rather widely-spaced punctures, the lateral rows large and the dorsal rows fine; the intervals are very finely and sparsely punctured. The prosternum is rugose and bears a pair of strongly sinuous carinæ which are parallel for part of their length. The mesosternum is coarsely punctured, the metasternum finely and

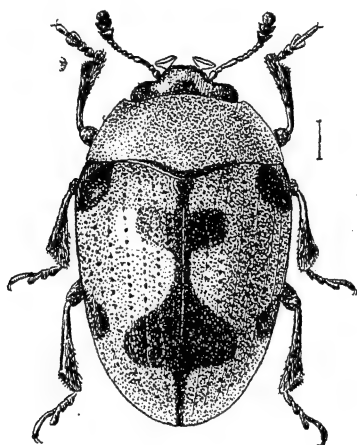


Fig. 25.—*Tritoma nigropicta*.

sparingly and the abdomen rather closely except upon the basal segment. The 3rd joint of the antenna is almost as long as the three succeeding joints, the 7th and 8th are very short and the last three form an oval and fairly compact club, of which the terminal joint is pointed and the other two are very transverse. The last joint of the maxillary palpus is about half as broad again as it is long.

Length, 5.5 mm.; breadth, 3.5 mm.

ASSAM: Patkai Hills (*W. Doherty*).

Type in the British Museum.

This is a large species with very distinctive pattern, shape and puncturation.

112. *Tritoma nigribasis*, sp. nov.

Red-brown, with the head, prothorax, lower surface and legs orange and the basal margins of the elytra and the club of the antenna black.

Rather broadly oval, not very convex, smooth and shining. The head and pronotum are finely and evenly, not very closely,

punctured, the eyes small and far apart. The sides of the pronotum are feebly curved, the angles are blunt, the angle-pores well-marked and the posterior lobe not strong. The scutellum is smooth and rather transverse. The elytra are finely and not deeply punctured in rows, and the intervals bear extremely minute scanty punctures. The lower surface is very finely and scantily punctured, the prosternum is broad and flat, with a pair of bisinuate carinae, which are parallel for part of their length, and the metasternum and abdomen have long, oblique coxal lines. The 3rd joint of the antenna is as long as the next two together, the 7th and 8th are short and the last three form a compact short oval club. The last joint of the maxillary palpus is twice as broad as it is long.

Length, 4 mm.; *breadth*, 2.5 mm.

CEYLON (*Nietner*).

Type in the British Museum; co-type in the Berlin Entomological Institute.

113. *Tritoma lobisternum*, sp. nov.

Bright yellow, with the pronotum and the club of the antenna darker, and the scutellum and elytra black, the latter decorated with a large common heart-shaped dorsal yellow patch.

Broadly oval, very convex, smooth and shining, with short stout legs. The head and pronotum are finely, not very sparsely, punctured, with the clypeus broad and gently emarginate and the eyes divided by about four times their radius. The pronotum is not very short, its sides are straight and convergent, the front angles bluntly prominent and the hind angles not very obtuse. The elytra are finely and irregularly punctured, with longitudinal rows of rather larger punctures, distinct upon the outer half, but almost imperceptible upon the inner half. The lower surface is thinly clothed with minute yellowish setae, which become longer and closer upon the middle part of the prosternum. The middle of the front edge of the prosternum is produced into a prominent rounded lobe. The front coxal lines are strongly sinuated, but extend very little in front of the coxae; the middle of the mesosternum, metasternum and abdomen are finely and closely punctured and the sides more strongly and less closely. The 3rd joint of the antenna is a little longer than the succeeding two together, the 4th to the 8th are equal in length, but the 8th is about as broad as it is long, and the last three form a moderately elongate club, with its last joint elongate-oval. The tibiae are very broad at the ends.

Length, 3 mm.; *breadth*, 2 mm.

ASSAM: Patkai Hills (*W. Doherty*). SIAM: Renong (*Doherty*).

Type in the British Museum.

The middle and sides of the pronotum and the back of the head are vaguely darker than the remainder, and the yellow elytral patch is variable. In the type (from Siam) its length and

breadth are about half those of the combined elytra, and in the second example (from Assam) it extends to the base of the elytra and leaves at the sides and apex a black margin, the dimensions of which equal only about a quarter of those of the elytra. The hairy prosternum, with its prominent rounded lobe at the anterior margin, renders the species easily recognizable.

114. *Tritoma scutigera*, sp. nov.

Bright orange-yellow, with the pronotum, the sides and apices of the elytra, the antennal club, femora and tibiæ black.

Broadly oval, convex, smooth and shining, with the legs and antennæ short. The head is finely and evenly punctured, with the clypeus narrow in front and deeply emarginate and the eyes small and far apart. The pronotum is similarly punctured, with the sides gently rounded, the front angles right angles, the hind angles obtuse. The scutellum is minutely punctured and almost semicircular. The elytra bear well-marked longitudinal lines of regular punctures, and the intervals are more finely but distinctly punctured. The prosternum is almost unpunctured and has a sharp elevation at the middle of its front margin and a pair of straight and strongly convergent carinæ behind. The metasternum and abdomen are coarsely punctured at the sides and finely in the middle, the coxal lines of the former reaching the middle of the segment, and those of the latter almost attaining the hind margin of the basal sternite. The 3rd joint of the antenna is more than twice as long as the next, the 4th to 8th are short, together a little longer than the compact oval club, of which the 9th and 10th joints are strongly transverse and the 11th pear-shaped and closely embraced by the 10th. The last joint of the maxillary palpus is twice as wide as it is long. The tibiæ are rather broad at the extremity.

Length, 4 mm.; *breadth*, 3 mm.

ASSAM: Lakhimpur, Upper Dihing (C. F. C. Beeson, May); Patkai Hills (W. Doherty).

Type in the British Museum.

Tritoma scutigera has a very close affinity with the Bornean *T. anisotomoides*, Crotch, of which the type is unique, immature and imperfect. It is a larger species, with the eyes a little farther apart and the tarsi thicker. The general aspect, and especially the rather peculiarly formed club of the antenna, are as in the Sumatran insect for which Westwood made the genus *Motrita*, but the antennæ are shorter, joints 4 to 8 being very short. The pattern of the upper surface is variable. In fully-coloured specimens only the head, the scutellum, and a large heart-shaped patch common to both elytra, its apex extending to two-thirds of the length of the suture, are pale, but the black elytral border may shrink to an apical patch only or disappear, and I have seen entirely pale examples.

The three following species of Motschulsky are unknown to me, and his descriptions are here given in translation.

115. *Tritoma cyanipennis*.

Triplax cyanipennis, Motsch., Etudes Entom. vii, 1858, p. 114.

"Form and size of our *Tritoma bipustulata*, black, with the elytra deep blue, the base of the antennæ and the last joint of the tarsi brown, the palpi and genital parts testaceous. The thorax is smaller, the posterior angles more rectangular, the puncturation less strong. The scutellum is triangular, smooth and black. The elytra are broader than the thorax, narrowed behind, covered with punctured striæ with flat intervals bearing a few very fine scattered punctures; the humeral angles are sharp and rather prominent. The lower surface of the body is strongly punctured, especially the abdomen."

Described as "Indian."

116. *Tritoma quadrimaculata*.

Triplax quadrimaculata, Motsch., Etudes Entom. vii, 1858, p. 115.

"Also of the size of our *Tritoma bipustulata*, but a little narrower and more attenuated in front, which gives it a more regularly oval form. The general colour is black, a little bronzy and greenish above, more brownish beneath; the posterior part of the head, the parts of the mouth, the palpi, the base of the antennæ, the legs, the abdomen and four large spots on the elytra are testaceous, two of these occupy the humeral angles and two the posterior part before the extremity towards the suture. The head is more strongly punctured, the two impressions between the insertion of the antennæ effaced, the thorax narrower, more distinctly margined, the puncturation closer, the anterior angles more prominent; striæ of the elytra finer, the intervals covered with hardly visible punctures, the lower surface of the body, on the contrary, with more distinct puncturation."

Described as "Indian."

117. *Tritoma lugubris*.

Triplax lugubris, Motsch., Etudes Entom. vii, 1858, p. 113.

"Ovate, subconvex, shining, punctulated, pitchy-black; with the sternum, the elytral margin beneath, the base of the antennæ, the palpi and legs fusco-testaceous, the thorax transverse, bisinuate behind, the elytra distinctly punctate-striate, the last joint of the maxillary palpi flat, hatchet-shaped, the hind tarsi five-jointed, the first joint minute but distinct.

"Length, $1\frac{1}{2}$ line; breadth, $\frac{4}{5}$ line.

"Short form of our *Tr. rufipes*, but more oval at the humeral angles, which are less prominent. The colour is blackish-brown all over the upper surface and lighter beneath, the striæ upon the elytra more coarsely punctured, but the intervals more finely.

"Taken by Mr. Nietner at Colombo in the island of Ceylon."

Genus **SPONDOTRIPLAX**.

Spondotriplax, Crotch, Cist. Ent. i, 1876, p. 469.

Neotritoma, Heller, Arch. f. Nat. lxxxiv, 1918 (1920), p. 28. (Type, *N. monticola*, Heller; Sumatra.) (New syn.)

TYPE, *Spondotriplax endomychoides*, Crotch (Borneo).

Range. Indo-Malayan Region.

Rather broadly oval in shape, with moderately stout legs and antennæ, the latter having the third joint about as long as the three following it and the club composed of five short transverse joints, the last three closely articulated and very broad. The tibiæ are slender at the base and gradually dilate to the extremity, where they are rather broad, and the tarsi are moderately long and not very much dilated. The eyes are small and finely faceted. The sides of the mouth are not very broadly dilated. The last joint of the maxillary palpus is strongly transverse. The coxæ are wide apart, the prosternum has long incised striæ almost or completely meeting in front, the mesosternum bears an incised semicircle between the coxæ, and the metasternum has straight coxal lines which extend to the middle of the outer margins.

Heller's *Neotritoma* is united with this genus with a certain hesitation, for I do not know the Sumatran insect named as its type. The sole character mentioned in the generic diagnosis is the shape of the last joint of the maxillary palpus, which is in no way peculiar, the form of the antennæ being the leading feature. According to the description of *N. monticola*, Heller, the antennal club consists of five transverse joints, but, as figured in a detail drawing, of four only, the seventh joint being elongate; while, in the tabular key to the genera, *Neotritoma* is placed amongst those with an abruptly three-jointed club. Our species *diaperina* is referred by Heller to this genus, and its antenna is drawn with a four-jointed club, which is incorrect, and it must be supposed that this is also the case with *N. monticola*.

Key to the Species of SPONDOTRIPLAX.

- 1 (6) Black, with orange markings.
- 2 (5) Postmedian band not (or little) produced; metasternum strongly punctured.
- 3 (4) Humeral angles of elytra black *diaperina*, Gorh., p. 142.
- 4 (3) Humeral angles of elytra not black . . . *soror*, sp. n., p. 143.
- 5 (2) Postmedian band produced; metasternum lightly punctured *fulviceps*, sp. n., p. 144.
- 6 (1) Yellow, with black markings *andamana*, sp. n., p. 144.

118. *Spondotriplax diaperina*.

Cyrtotriplax diaperina, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 290.

Black, with two orange-coloured patches upon each elytron, the first at the base, irregularly quadrate in shape, with the

posterior margin produced into three angular lobes, and the humeral angle bearing a black spot, the second forming with that on the opposite side a nearly straight subapical band, interrupted at the suture. The tarsi and the base of the antennæ are red and the sides of the pronotum are sometimes of a deep reddish tinge.

Oval in shape, convex, smooth and shining. The head and pronotum are moderately strongly and closely punctured, the eyes prominent and not very finely faceted. The sides of the pronotum are gently rounded, the angles nearly right angles and the base lightly trisinuated. The scutellum is broadly triangular. The elytra bear strongly-impressed punctures in longitudinal rows, the intervals being extremely minutely punctured. The prosternum bears lateral striæ, which are nearly parallel in front of the coxæ and strongly divergent behind, and is broadly produced and emarginate behind, the mesosternum is not broad, the metasternum finely but distinctly and not closely punctured, the abdomen finely and closely, the basal segment of the latter forming a broad process between the hind coxæ. The antennæ are short, but the third joint is slender and about as long as the following three together, and the club consists of five transverse and rather closely-articulated joints. The last joint of the maxillary palpus is rather large and transverse.

Length, 3.5-5 mm.; *breadth*, 2-3 mm.

BURMA: Bhamo (*L. Fea*, Aug.). TENASSERIM Mts., 3000-4200 ft. (*L. Fea*, March).

Type in the Genoa Museum; co-type in the British Museum.

119. *Spondotriplax soror*, sp. nov.

Black, with the head, legs, base of the antennæ and sometimes the lower surface partly or entirely reddish and each elytron decorated with two bright orange marks, an irregularly quadrate one occupying the entire humeral angle, with its inner hind corner a little produced backwards, and a transverse postmedian band, curved forward and produced a little along the sutural margin, but not quite reaching the outer margin.

Oval, convex, smooth and shining. The head and pronotum are rather closely and evenly punctured: the latter is short and broad, with its sides feebly rounded, the front angle rather produced and the hind one quadrate; its basal margin is distinctly angulated in the middle, but nearly straight from there to the sides. The elytra bear well-marked rows of fine and close punctures, and the intervals are closely and minutely punctured. The prosternum is very minutely and sparsely punctured in the middle, and its coxal lines are almost straight, except in front, where they unite in a curve. The metasternum is rather strongly punctured and the abdomen finely and closely. The legs are rather stout and the tibiæ a little curved. The 3rd joint of the antenna is a little curved and nearly as long as the three which follow, of which the 4th and 5th are as long as wide and the 6th

minutely transverse. The last five are compact and strongly transverse. The terminal joint of the maxillary palpus is a little wider than it is long.

Length, 3.5-4 mm.; *breadth*, 2-2.5 mm.

BERMA: Palon, Pegu (*L. Fea*, Aug.-Sept.); Ruby Mines (*W. Doherty*). TENASSERIM: Meekalan Hills, 3000-4000 ft. (*L. Fea*, March).

Type in the British Museum.

Two specimens of this species were included by Gorham amongst his series of *S. diaperina*. It is a rather smaller form, a little shorter, with the prothorax rather more transverse and the pattern different. The yellow humeral patch is entire, and not interrupted at the outer front angle nor deeply indented at its hind margin, and the posterior band is curved forward, continuous with that of the opposite side but detached from the outer margin.

120. *Spondotriplax fulviceps*, sp. nov.

Black, with the head, the basal part of the antenna, the legs, abdomen and a large humeral patch and a postmedian transverse band upon the elytra, yellow. The humeral patch is roughly quadrate, with its inner hind angle produced into a large oblique lobe, and the postmedian band almost reaches the outer margins and is produced forward along the suture to within a short distance of the humeral lobes.

Oval, convex, smooth and shining. The head and pronotum are rather closely and evenly, moderately strongly punctured, the sides almost straight, the front angles a little produced, the hind angles quadrate and the base lobed, not broadly, in the middle. The elytra bear well-marked rows of fine and close punctures, and the intervals are closely but very minutely punctured. The prosternum has nearly straight lateral lines meeting in a blunt point and enclosing an equilateral triangle. The metasternum is sparingly punctured at the sides, but almost imperceptibly in the middle, and the abdomen is very finely and not very closely punctured.

Length, 3.5 mm.; *breadth*, 2 mm.

SIKKIM: Darjeeling, Gopaldhara, Rungbong Valley (*H. Stevens*, Oct.).

Type in the British Museum.

In size, shape and most other features this exactly resembles *S. soror*, but it is a little less broad behind the shoulders, the lower surface is very finely punctured and the pattern is different.

121. *Spondotriplax andamana*, sp. nov.

Bright orange, with the antennæ (except the first two joints) black and the elytra decorated with a small black spot, common to both, at the middle of the suture and a larger one near the extremity, and upon each a small spot in the humeral angle, a larger one at the base near the scutellum, a still larger median spot,

a little emarginate behind, and a small subapical one united with the posterior sutural spot.

Oval, not very convex, smooth and shining. The head and pronotum are moderately strongly, closely and evenly punctured, the eyes separated by about four times their radius, the sides of the pronotum very gently rounded, the front angles acutely produced and the hind angles almost rectangular. The elytra bear rows of moderately fine but well-marked punctures, and the intervals are finely punctured. The prosternum is coarsely and closely punctured at the sides and almost smooth in the middle, and the coxal lines are almost straight but slightly curved in front, where

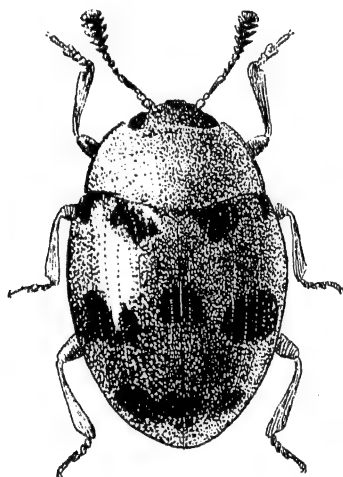


Fig. 26.—*Spondotriplax andamana*.

they do not quite unite. The metasternum and abdomen are strongly punctured at the sides and finely in the middle. The third joint of the antenna is as long as the three following, which successively diminish in length. The terminal joint of the maxillary palpus is a little wider than it is long.

Length, 4 mm.; breadth, 2.5 mm.

ANDAMAN IS. (*Capt. Wimberley*).

Type in the British Museum. The specimen, received with the Fry Bequest, is unique.

Genus **TETRATRITOMA**, nov.

TYPE, *Tetratritoma militaris*, sp. nov.

Range. Northern India and Burma.

Oval in shape and very smooth and shining above and beneath, with long and slender antennæ, of which the 1st joint and the 3rd to the 7th are elongate, the 2nd small and globular, the 3rd

markedly longer than those succeeding it, and the last four form a loosely-articulated club. The legs are fairly stout, the tibiæ rather broad at the extremities, and the tarsi slightly dilate from the base to the 3rd joint. The eyes are small and remote, very prominent and finely faceted. The head is without stridulatory files. The terminal joint of the maxillary palpus is extremely broad, about five times as wide as it is long. The angle-pores of the pronotum are large and conspicuous, and the base is finely margined. Upon the lower surface of the body coxal lines are entirely absent, and the basal sternite forms a rounded lobe between the hind coxæ.

All the known species are red, with black legs.

Key to the Species of TETRATRITOMA.

- | | |
|-------------------------------------|--------------------------------------|
| 1 (2) Head red | <i>angusta</i> , sp. n., p. 146. |
| 2 (1) Head black. | |
| 3 (4) Antennæ moderately long | <i>militaris</i> , sp. n., p. 146. |
| 4 (3) Antennæ very long | <i>longicornis</i> , sp. n., p. 147. |

122. *Tetratritoma angusta*, sp. nov.

Bright vermilion-red above and beneath, including the head, with the eyes, antennæ and legs (except the tarsi) black.

Narrowly oval, smooth and shining, with rather stout legs and slender antennæ. The head is rather strongly punctured, with the clypeus deeply emarginate, and the eyes small and very prominent, divided by more than four times their radius. The pronotum is finely and sparingly punctured, half as broad again as it is long, narrowing from base to apex, with the sides very gently curved, the front angles acute, the hind angles obtuse and the base finely margined. The elytra bear rows of strong but slightly uneven punctures, and the intervals are feebly convex and extremely sparsely punctured. The lower surface is closely punctured, the punctures being rather large at the sides and finer in the middle. The tibiæ, especially those of the middle legs, are rather broad at the extremity. Joints 1 to 7 of the antenna are elongate, the 3rd one and a half times as long as the 4th, and the last four form a very loose and ill-defined narrow club.

Length, 6 mm.; *breadth*, 3 mm.

KASHMIR: near Gulmerg, 5000-9000 ft. (*Dr. J. E. Aitchison*).

Type in the British Museum. The type is unique.

123. *Tetratritoma militaris*, sp. nov.

Bright red, with the head (except the occipital region behind the eye), the antennæ and the legs (except the coxæ) black.

Oval in shape and very smooth and shining. The head is rather small, with deep scattered punctures, the eyes very prominent and the front margin of the clypeus a little emarginate. The pronotum is rather sparingly but very distinctly punctured, the sides are feebly rounded, the front angles a little produced, the hind angles

almost right angles, and the base feebly lobed in the middle, with a few large marginal punctures. The scutellum is triangular and nearly as long as it is wide at the base. The elytra bear regular longitudinal rows of rather large punctures, not connected by striæ, and the intervals contain very sparse but scarcely smaller punctures. The lower surface is rather coarsely punctured, except at the middle of the metasternum and first sternite, where the punctures are sparse and moderately fine. Joints 3 to 7 of the

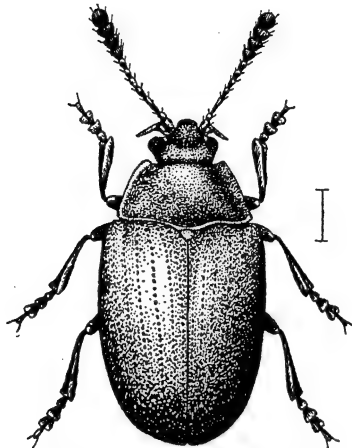


Fig. 27.—*Tetratritoma militaris*.

antennæ are slender, the 3rd half as long again as the 4th, the 7th a little shorter and stouter than those preceding, and the last four moderately broad but loosely connected, the terminal one nearly circular.

Length, 6–7 mm.; breadth, 3–3.5 mm.

PUNJAB: Simla Hills, Gahan, 7000 ft. NEPAL-SIKKIM FRONTIER: Tonglu, 10,000 ft. (*H. Stevens*, July–Aug.).

Found in fungus in September by Dr. C. F. C. Beeson and Mr. S. N. Chatterjee.

Type in the British Museum.

124. *Tetratritoma longicornis*, sp. nov.

Bright red, with the head (except the occipital region behind the eyes), the antennæ and legs (except the coxæ) black.

Rather oblong in shape, very smooth and shining. The head bears deep scattered punctures, the clypeus is deeply emarginate in front and the eyes are very prominent. The pronotum is broad, with scattered punctures, its sides are gently rounded, the front angles a little produced, the hind angles almost right angles, and the base feebly lobed in the middle, with a few large marginal punctures. The scutellum is triangular, and a little wider at the

base than it is long. The elytra bear lines of very fine but not very close punctures, and the intervals bear a very few similar but scattered punctures. The sternum is coarsely punctured beneath, especially at the sides, and the abdomen is strongly and closely punctured. The antennæ are very long, joint 3 four times as long as it is wide, joints 4 to 7 about two and a half times, and the last four forming a loosely-jointed narrow club, 8 longer, 9 as long as, and 10 shorter than, wide and the terminal joint almost circular.

Length, 7 mm. ; *breadth*, 4 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum. Only a single specimen is known.

Subfamily EUXESTINÆ.

Pleosomides, Fauvel, Rev. d'Ent. x, 1891, p. 162; op. cit. xiv, 1895, p. 105; op. cit. xxii, 1903, p. 343.

Body compact, oval and convex, with the antennæ and legs very short. Antennæ compact, with the number of joints more or less reduced, the first joint large and broad, fitting the angle between clypeus and eye, those preceding the club minute and very closely articulated; the club large, broad and flat, with one or two close sutures or entirely solid and round. Front coxal cavities closed behind. Femora and tibiæ broad and flat. Tarsi 4-jointed, not broad, with the basal joint produced into a narrow lobe, the 2nd and 3rd very short, the 4th moderately long. Wings well-developed, with the veins reduced and almost confined to the inner half. Wings and elytra with well-marked stridulatory areas.

This little group consists of four known genera, *Euxestus*, *Eiloreus*, *Cycloxenus* and *Euxestoxenus*; the first occurs in India and throughout the warmer parts of the world, the second is at present known only from the Hawaiian and Seychelles Islands, and the two others are at present known only from India. All the species are very small and have tarsi and antennæ of a peculiar and distinctive type, the former 4-jointed, the latter with a very short, broad club, consisting in *Cycloxenus* and *Euxestoxenus* of a single large round joint, which different species of *Euxestus* show to be derived from the progressive solidification of the terminal joints. The basal joint of the tarsus is long and produced beneath the two very small ones which succeed, the penultimate one not closely connected with the terminal one, as is the usual condition with both EROTYLIDÆ and ENDOMYCHIDÆ. It seems probable that the missing joint was the original second one, and it is possible that the long basal joint consists of two united together.

Although highly specialised in structure, these insects seem to have been derived from a rather primitive stock, as they show relationships with both EROTYLIDÆ and ENDOMYCHIDÆ. The structure of the mouth is that of the EROTYLIDÆ, that of the

tarsi more of the Endomychid type. The front coxal cavities are closed, which seems to exclude them from the latter family, while the wings show a much greater resemblance to the Endomychid than the Erotylid pattern. The short antennæ are quite unlike any found in the ENDOMYCHIDÆ except those of the anomalous genus *Monocoryna*, with which there is no real affinity, and seem to be connected by their less highly modified phases with the Erotylid type.

The name PLEOSOMIDES was given to the group by Fauvel under the erroneous supposition that *Euxestus* was identical with *Pleosoma*, a genus of the family COLYDIIDÆ, and cannot be adopted.

Key to the Genera of EUXESTINÆ.

- 1 (2) Upper surface very smooth and glossy EUXESTUS, Woll., p. 149.
- 2 (1) Upper surface rough and opaque, clothed with short, stiff bristles.
- 3 (4) Elytra without impressed lines: legs extremely short and broad CYCLOXENUS, gen. n., p. 152.
- 4 (3) Elytra with impressed lines: legs moderately long EUXESTOXENUS, gen. n., p. 155.

Genus EUXESTUS.

Euxestus, Woll., Ann. Mag. Nat. Hist. (3) ii, 1858, p. 411; Fauvel, Rev. d'Ent. xiv, 1895, p. 105; id., op. cit. xxii, 1903, p. 343; Arrow, Ann. Mag. Nat. Hist. (9) x, 1922, p. 74.

Tritomidea, Motsch., Etudes Ent. viii, 1859, p. 104.

Hypodacne, Lec., Trans. Amer. Ent. Soc. v, 1875, p. 170.

Neoplotera, Belon, Rev. d'Ent. iv, 1885, p. 239.

TYPE, *Euxestus parki*, Woll.

Range. Warm regions throughout the World.

Minute, globose, very compactly formed, with short legs and antennæ. Legs flattened; femora broad; tibiæ narrow at the base, dilating gradually and rounded at the extremity; tarsi compressed, narrow, 4-jointed, the basal joint elongate, produced beneath, the two succeeding joints very short and minute, the last long and slender, the claws minute. Basal joint of the antenna large and subtriangular, 2nd slightly elongate, 3rd about three times as long as wide, 4th to 6th very minute and partially fused with the 3rd and with each other, 7th and 8th slightly increasing but very short and transverse, the 8th twice as wide as it is long, cup-shaped and closely applied to the base of the club, the latter rather large, round and flat, composed of two or three consolidated joints, the terminal one clothed with short hairs and sunk into the penultimate. Eyes small and coarsely faceted. Mentum transverse, broadly triangular, depressed at the sides anteriorly and sharply acuminate in the middle; ligula long and narrow; labial palpi very short and thick, the terminal joint a little longer

than wide. Maxilla rather long, the lobes narrow and subequal, the palpus stout, the last joint elongate and pointed. Mandible not very stout, right-angled externally, with the apex produced and minutely tridentate. Prosternum short, flat, meeting the epimera, the coxæ deeply sunk. Middle and hind coxæ widely separated, the mesosternum short and broad, the meso-metasternal suture straight. Abdomen with five ventral sternites, the basal one as long as the three succeeding, meeting the metasternum in a straight line.

It is not possible to say definitely how many joints compose the antenna, several being fused together and the degree of fusion varying in different species. The club appears to be composed of three joints telescoped together into a nearly round mass a little broader than it is long. One or two are similarly fused more or less completely with the 3rd joint.

There is a great resemblance between the species of this genus and those belonging to *Coluocera*, which are found in many parts of the world, generally in association with ants, the resemblance extending to the peculiar form of the antenna as well as the general appearance. *Coluocera*, which is assigned to the family LATHRIDIIDÆ, has only three joints to the tarsus, and the eyes also are entirely different. The genus *Pleosoma* is also superficially similar.

These insects seem to be especially prevalent in islands throughout the world and are found in decomposing vegetable matter, as well as in the nests of ants. Fauvel records specimens found in France (Caen) amongst cargoes of ground-nuts (*Arachis*) imported from Senegambia.

Key to the Species of EUXESTUS.

1. Broadly oval; usually decorated with three red dorsal patches. *translucidus*, Motsch., p. 151.
2. Oval; usually with the extremities of the elytra red *parki*, Woll., p. 150.
3. Narrowly oval *oblongus*, Motsch., p. 152.

125. *Euxestus parki*.

Euxestus parki, Woll., Ann. Mag. Nat. Hist. (3) ii, p. 412; id., Coleopt. Atlant. 1865, p. 386; Arrow, Ann. Mag. Nat. Hist. (8) xx, 1917, pp 138, 368; op. cit. (9) x, 1922, p. 74.

Tritomideu basalis, Motsch., Etudes Ent. viii, 1859, p. 106.

Euxestus minor, Sharp, Trans. Roy. Dublin Soc. (2) iii, 1885, p. 145, pl. iv, fig. 14.

Neoplotera peregrina, Belon, Revue d'Ent. iv, 1885, p. 239; id., Ann. Mus. Civ. Genova, xxx, 1891, p. 877.

Euxestus picipes, Gorb., Proc. Zool. Soc. Lond. 1898, p. 336; Champ., Trans. Ent. Soc. Lond. 1913, p. 79.

Olibrus erithacus, Chev., Ann. Soc. Ent. France, 1883, p. 599.

Rusty-red, with the legs and antennæ a little paler, or the

pronotum and elytra black, except the circumference or the anterior and lateral margins of the former and the apical part of the latter.

Oval, very convex, smooth and shining, with the upper surface minutely punctured, the punctures rather stronger upon the head, irregular upon the pronotum, and sparse and vaguely linear upon the elytra. The lower surface is extremely minutely and scantily punctured.

Length, 2 mm.; *breadth*, 1 mm.

BURMA: Bhamo (*L. Fea*). ANDAMAN IS. (*Roepstorff*). S. INDIA: Nilgiri Hills (*H. L. Andrewes*). CEYLON: Colombo, coast level (*G. Lewis*, April); Galle, coast level (*G. Lewis*, Nov., Dec.); Dikoya, 3800-4200 ft. (*G. Lewis*, Dec., Jan.). S. CHINA. PHILIPPINE IS. MALAY PENINSULA, JAVA. NEW HEBRIDES. HAWAIIAN IS. CHRISTMAS I. (Indian Ocean). LARAT I. SEYCHELLES IS. RODRIGUEZ I. HAITI. GRENADA. MEXICO. GUATEMALA. MADEIRA. SENEGAMBIA.

Types of *E. parki*, Woll., *minor*, Sharp, and *piciceps*, Gorrh., in the British Museum; that of *erithacus*, Chev., in the Paris Museum; that of *basalis*, Motsch., probably lost.

Mr. H. L. Andrewes found this insect in large numbers in the nest of an ant, *Pheidole*. Wollaston also found it in ants' nests in Madeira, but more frequently amongst garden-refuse. Dr. Hugh Scott took it from beneath the leaf-bases of a Coco-de-Mer Palm (*Lodoicea*) in the Seychelles and, as already mentioned, Fauvel has recorded its importation into France in cargoes of ground-nuts (*Arachis*).

126. *Euxestus translucidus*.

Tritomidea translucida, Motsch., Etudes Ent. viii, 1859, p. 106; Arrow, Ann. Mag. Nat. Hist. (8) xx, 1917, p. 368.

Black, with the head, the front and side margins of the pronotum, a vaguely triangular patch occupying the anterior part of each elytron, with its apex extending to about a third of the length of the elytron, and a common vaguely round patch upon the suture just beyond the middle, dark red, and the entire lower surface, legs and antennæ rust-coloured. The posterior red patch may unite laterally with the two anterior patches, enclosing a black central mass, or it may disappear entirely.

Broadly oval, very smooth and shining above and beneath, with fine punctures upon the upper surface, a little larger and deeper upon the head, irregular upon the pronotum and indefinitely linear upon the elytra. The lower surface is extremely scantily and minutely punctured.

Length, 2-2.5 mm.; *breadth*, 1-1.3 mm.

CEYLON: Dikoya, 3800-4200 ft. (*G. Lewis*, Dec., Jan.); Bogawantalawa, 4900-5300 ft. (*G. Lewis*, Feb., Mar.).

Type probably lost.

E. translucidus has the closest resemblance to the typical species

E. parki, but in addition to the different, though inconstant, coloration, it is rather larger and less narrowly oval.

According to Motschulsky, this species was found by Nietner at Madura (S. India) as well as in Ceylon. There is a specimen

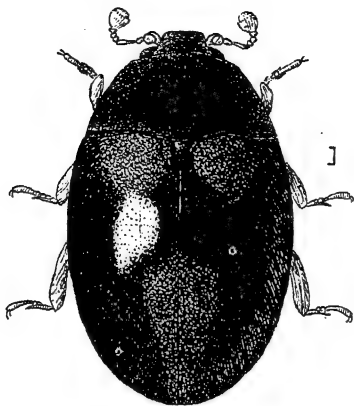


Fig. 28.—*Euxestus translucidus*.

in the British Museum bearing the name *translucida* in the handwriting of E. W. Janson and probably received by him from Motschulsky.

127. *Euxestus oblongus*.

Tritomidea oblonga, Motsch., Etudes Ent. viii, 1859, p. 106.

"A third species from the Indian continent is smaller by one-third than *translucida*, but half as broad, which gives it rather the elongate shape of *Engis*, although less parallel and more regularly oval. The general colour is brown, blackish above and reddish beneath, the palpi, legs and antennal club more testaceous, the head in front, sides of the thorax and extremity of the elytra reddish; thorax longer, anterior angles more prominent, puncturation stronger than in *translucida*; elytra attenuated behind, bearing large punctures, which sometimes unite into vestigial longitudinal lines, base and suture sometimes translucent red; lower surface smooth."

This may quite possibly be *E. phalacroides*, Woll., but I know that species only from St. Helena, South Africa and the Seychelles Islands.

Genus **CYCLOXENUS**, nov.

TYPE, *Cycloxenus hispidus*, sp. nov.

Range. India (United Provinces and Bombay).

Oval, very compact, with short, very stout, legs and antennæ, the surface clothed with short erect setæ. Femora and tibiæ very flat

and broad, the tibiae narrow at the point of articulation, rapidly dilating and rounded at the ends; tarsi very short and compressed, the basal joint produced as a narrow lobe, the 2nd and 3rd very short and minute, not reaching the end of the 1st, the 4th moderately long. Antenna 9-jointed, the basal joint large, fitting the angle between clypeus and eye-prominence, 2nd joint subglobular, 3rd to 8th very short and transverse, progressively widening, 9th large, flat and oval. Eyes rather coarsely faceted, lenticular in shape, placed vertically and appearing very small and far apart as seen from above. Mentum transverse, broadly triangular, depressed

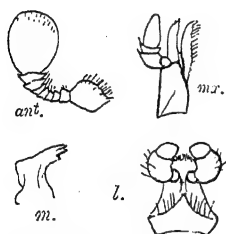


Fig. 29.—*Cycloxenus hispidus*.

ant. antenna; m. mandible; mx. maxilla; l. labium.

at the sides anteriorly and sharply acuminate in the middle; ligula long and narrow; labial palpi close together, very short and thick, the basal joint minute and the 2nd and 3rd together almost semicircular. Maxilla rather long, the lobes narrow and subequal, the inner one with a sharp terminal tooth; palpus stout, with the terminal joint elongate and pointed. Mandible rectangular at its outer edge, with the tip produced and minutely tridentate. Prosthernum short, the front margin forming a notch at the junction with the episterna, narrow between the front coxae and meeting the episterna behind them. Mesosternum

small and subquadrate between the coxae. Metasternum forming a rather broad rounded lobe between the hind coxae. Wings well-developed, rather long and narrow, the veins much reduced and almost confined to the inner half, the median vein extended to the middle of the posterior margin, just before which point is a pigmented stridulatory patch. Elytra without striae, with rather wide epipleurae beneath, the sides straight anteriorly, the shoulders square, the extremities jointly rounded, the apices sharp, the inner surface with a dull oval stridulatory swelling just within the inner margin near the tip.

128. *Cycloxenus hispidus*, sp. nov.

Uniformly dull earthy brown above, with the lower surface, legs and antennae reddish-yellow and the upper surface evenly, but not densely, clothed with short erect greyish-yellow bristles.

Broadly oblong-oval, convex, dull and opaque above, with the entire upper surface closely covered with roundish pits, without trace of linear arrangement. The clypeus is smoother than the remaining upper surface, short and broad, with its anterior edge straight. The eyes are very small and far apart, very prominent but inconspicuous dorsally. The pronotum is short, very convex, with its sides nearly vertical behind, the lateral margins bisinuated, the hind angles entirely rounded off, the front angles prominent

but blunt and the base broadly lobed in the middle. The scutellum is minute and almost concealed by the thoracic lobe. The elytra are very convex, with the sides parallel from the shoulder to beyond the middle and almost vertical and the posterior margins jointly rounded. The lower surface and legs are shining, the former scantily clothed with short setæ, with irregular, not

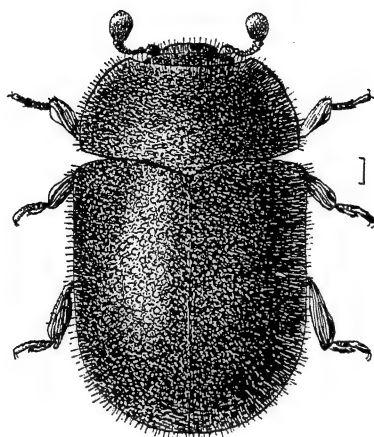


Fig. 30.—*Cycloxenus hispidus*.

densely set, large pits, and fine punctures in the interstices. The metasternum forms a slightly rounded lobe between the hind coxæ. The basal ventral sternite is as long as the two following, and the last is very finely and closely punctured, without large pits.

Length, 3.5 mm.; *breadth*, 2 mm.

UNITED PROVINCES: Dehra Dun (*S. N. Chatterjee*, Feb.; *M. Cameron*, July); Almora District, Bageswar, 3500 ft. (*H. G. Champion*); Haldwani Division, 800–1200 ft., Kumaon (*H. G. Champion*). BOMBAY: Poona District, Kirkee (*Dr. Assmuth*).

Type in the British Museum.

This interesting little insect occurs in large numbers in the nests of Termites (*Odontotermes obesus* and *O. brunneus*). *Dr. M. Cameron* found it in the brood-chambers of the former, in company with the larvæ of its host, and he believes it to feed upon the fungus provided for the former. *Mr. Champion* found as many as twenty specimens in one termitarium. He also took a few specimens at light. As its appearance indicates, it is very sluggish in its movements. The short stiff hairs clothing it are a little bent at the tip, evidently for the retention of the dusty particles with which it is always covered and which no doubt serve to conceal it.

97. *Philopona decemmaculata*, sp. nov.

Body oblong-ovate, somewhat broadened behind the middle. General colour shining yellow-brown; scutellum piceous; each elytron with five round black spots: two placed side by side at the base; two others, somewhat larger and similarly placed, just behind the middle; and one small spot on the apical part, near the suture. In one example these spots are obsolescent. The suture for a little distance from the base is somewhat darker than the yellow-brown ground-colour.

Head with vertex finely punctate, frontal elevations and interantennal carina well developed. Antennæ extending a little distance beyond the base of the prothorax, but not reaching the middle of the elytra; first segment the longest and thickest, club-shaped, second very short and thick, third to fifth slender and almost equal to each other, sixth and seventh equal to each other, eighth to eleventh somewhat shorter and slightly thicker, but equal to each other. *Prothorax* much broader than long, upper surface finely and minutely punctate, basal transverse depression extending right along the basal margin, lateral margins explanate and concave, sides more or less rounded, anterior angles produced, posterior angles almost right angles. *Scutellum* triangular with apex rounded and surface impunctate. *Elytra* broader at base than prothorax; upper surface confusedly, closely and strongly punctate; lateral margins somewhat explanate and concave. *Underside* sparsely covered with fine pubescence; posterior tibiae short, ending in a small sharp spine; first segment of posterior tarsi very short, claw-segment considerably inflated.

Length, 4–4½ mm.

TRAVANCORE: Wallardi, 5. ix. 1904 (*R. P. Favre*).

Type in the British Museum. Described from two examples.

98. *Philopona signata*, Duvivier.

Hyphaxis signata, Duviv., Ann. Soc. Ent. Belg. xxxvi, 1892, p. 429.

Body oblong-ovate. General colour yellow-brown; scutellum piceous; the antennæ (except the two or three basal segments), a long stripe on each elytron extending from the depression within the humeral callus to the apical part, but not reaching the apical margin, the suture narrowly, the breast and the apices of the posterior femora, pitchy-black; the pitchy colour varies in intensity, and in some cases the elytral stripe is interrupted, but can be faintly discerned. The pronotum in some examples has a diffused pitchy-black colour on parts of the surface. The labrum is black, also sometimes a small area in the middle of the vertex.

Head with vertex strongly punctate (except a little elevated area in the middle, which is impunctate), the punctures being deep pits, sometimes confluent with each other; interocular space

the hind angles, where they are abruptly but obtusely angulate and become parallel. The base has a prominent, narrowly rounded lobe in the middle, almost covering the scutellum. The elytra are deeply striated, the striæ containing close and well-marked punctures, the intervals convex and finely and closely punctured. The apices are conjointly rounded, the apical angles sharp. The pro- and meso-sterna are rugosely punctured, the metasternum and abdomen beneath very finely punctured in the middle and very coarsely at the sides.

Length, 1.75 mm.; *breadth* 1 mm.

UNITED PROVINCES: Kumaon, Haldwani Division, Jaulasal, 1200 ft. (*H. G. Champion*, April).

Type in the British Museum.

Mr. Champion found four specimens of this tiny insect, upon one occasion only, within the comb of *Odontotermes obesus*; like *Cycloxenus hispidus*, it no doubt feeds on the fungus found there. It is nearly related to the last-named insect, though presenting many points of difference, besides being much smaller. It is evidently a much more active insect, the legs being very much longer, slight and delicate, in marked contrast to those of *Cycloxenus*. At the same time they are placed much farther apart, especially the front pair. The antennæ, although of the same peculiar type, are also longer and another joint has become fused with the solid club, which is narrower at its junction with the footstalk. The clypeus is very sharply separated from the forehead and of an unusual transversely rectangular shape, the large first joint of the antenna fitting into the angle made with the forehead. The sides of the prothorax have a peculiar outline and are rather flattened, and the elytra are notable for their very deep striation.

LANGURIIDÆ.

The family status of these insects has not been generally admitted, most writers, including Canon Fowler in the General Introduction to the present series of volumes, treating the group as a subfamily of the EROTYLIDÆ. The two first-discovered species were assigned by Fabricius to the genus *Trogosita*, but Latreille in 1802 constituted the genus *Languria*, which he described more fully in 1807. Lacordaire, in his Monograph of the Erotylidæ, 1842, omitted *Languria* from that family, suggesting, with his usual penetration, that there might be a closer affinity with the ENDOMYCHIDÆ, but Chapuis, who finished Lacordaire's great work, the 'Genera des Coléoptères,' in 1876, treated *Languria* and the related genus *Macromelea* as a tribe of EROTYLIDÆ. This view has been generally adopted since.

It is true that there are various points of close similarity between LANGURIIDÆ and EROTYLIDÆ, but in several important respects there is marked discrepancy. In the structure of the legs and tarsi there is almost complete agreement, but instead of the closed front coxal cavities, which form the essential character by which the EROTYLIDÆ are distinguished from the CRYPTOPHAGIDÆ, these cavities are open behind (see fig. 1 b, p. 1). In the organs of the mouth the ligula is strikingly different, that of the LANGURIIDÆ bearing wing-like lateral lobes of membrane, such as are found in the ENDOMYCHIDÆ but never in the EROTYLIDÆ. Another difference of importance is the normal occurrence in LANGURIIDÆ of a pair of lateral orifices connected with the basal margin of the pronotum. These are never found in the EROTYLIDÆ, but form one of the most constant features of the ENDOMYCHIDÆ, where they generally assume almost the identical form presented by nearly all LANGURIIDÆ. Open coxal cavities being also a feature of the ENDOMYCHIDÆ, the relationship between the two groups is certainly closer than their outward form seems to indicate, and it must be admitted that there could hardly be less resemblance in this latter respect. The linear form of the LANGURIIDÆ is no doubt closely correlated with the larval mode of life, and both habits and outward shape must be considered relatively unimportant as indications of affinity compared with deep-seated structural features. The different tarsus, with its three broadly flattened joints, the approximation of the hind coxæ and the peculiar articulation of a pointed ventral process of the abdomen with the metasternum, together with the feebly-developed epipleuræ of the elytra, distinguish them from the ENDOMYCHIDÆ and associate them with the EROTYLIDÆ and, in my opinion, they are best treated as a separate family with almost equal relationship to each of the other two.

Classification.

The most valuable work published upon the LANGURIIDÆ is the Conspectus of the Oriental and Australian species by Harold in Mittheilungen d. Münch. Ent. Verein, vol. iii, 1879. Motschulsky in 1860 and Crotch in 1876 had published descriptions of numerous species in an extremely cursory and inadequate manner, but Harold's work has the by no means common merit of dissipating much of the previous confusion and facilitating further study. With conspicuous acumen, although dealing with a comparatively small number of species, he detected the important phylogenetic features of the group, and it is unfortunate that later workers, whilst failing to find other characters of equal importance, have neglected to avail themselves of those discovered by him. Considering the materials available to him insufficient for the establishment of new genera, he treated all the Oriental and Australian species as members of the single genus *Languria*; but Gorham, in 1887 (Proc. Zool. Soc., p. 358), divided this into 33 genera, each described in a few words only and arranged in tabular form in two sections to which are given the names SPONGIOSO-PALMATI and TRICHIO-PALMATI. These are supposed to exhibit a difference in the hairy clothing of the feet, the nature of which is thus described by Gorham:—"I have examined the soles with the view of ascertaining if any such differences as Mr. Bates has used in the CARABIDÆ exist; and I find two types of feet, one with spongiöse close-set papillæ, the other similar, but with ragged rough hairs in addition and much hairier above and on the sides. The latter is the usual American type, the former the Eastern or Asiatic." In the Table which follows, the predominant Oriental genus *Anaclastus* (regarded by Gorham as forming two genera called *Anaclastus* and *Stenodastus*) and a few others are grouped with the American genera, while the remainder constitute (with one American genus) the section SPONGIOSO-PALMATI. In an earnest attempt to avail myself of this method of classification I have placed side by side examples of all Gorham's Oriental genera, and studied the tarsal clothing carefully, but have completely failed to find any correspondence between his grouping and definitions: indeed, by reversing the genera placed in his two categories I found at least as good an agreement. It is true that the LANGURIIDÆ of Tropical America have in general rather long hairy fringes at the sides of the feet (especially the front tarsi of the males). In the Old World species such fringes are less in evidence but occur in varying degrees, and the character is no more serviceable than many others in which every transition occurs from one extreme to the other. In the character of the soles of the feet there is no difference, and the terms SPONGIOSO-PALMATI and TRICHIO-PALMATI are only calculated to mislead.

Canon Fowler, in introducing his Classification of the LANGURIIDÆ in Wytsman's 'Genera Insectorum' (1908)*, has

* Fascicule 78.

stated that "it does not appear possible to regard Mr. Gorham's main division as practically workable except in the more extreme cases," but, having stated this, he proceeds to adopt the main division as the basis of his classification. He has thus condemned in advance the unhappy structure he has reared upon a foundation which he admitted to be incapable of supporting it.

A multitude of generic names have been introduced by these two writers, but, far from making an advance in systematizing the group, fresh confusion of the most complicated kind has resulted. To obtain a true and useful view of the phylogeny of the family it is necessary to go back to Harold's essay of 1879. As there explained, an important sectional character, which both Gorham and Fowler were apparently unable to perceive, exists in the sharp delimitation, by a groove and adjacent keel, of the epipleural margin of the elytron, found in the majority of the species but absent in one group of forms, most of which are now placed in the genus *Pachylanguria*, but which includes four other Indian genera. I have regarded as a subfamily (CLADOXENINÆ) a small group of genera, very few species of which were known to Harold, in which the club of the antenna is of a different type from that found elsewhere, resembling that of more primitive *Clavicornia* in being symmetrical and abrupt and formed of three loosely united, bead-like joints. These genera are also distinguished by the absence of the usual narrow linear form.

Structure.

The members of this family are remarkable in the first instance for the great elongation of body almost invariably characterising them, and secondly for the still more general smoothness of their surface, practically devoid of hair above and possessing only a very scanty clothing beneath, except upon the terminal part of the body and the feet. This smoothness of the surface is accompanied in very many by a bright metallic lustre, and in many more by sharply-contrasted red and green or blue colours.

Legs.—The legs are always slight and sometimes extremely slender, especially in the male. The trochanters are well-developed, separating the coxæ completely from the femora; the femora and tibiæ are of very simple form and the tarsi are always composed of five joints, of which the first three have flat pads beneath and the fourth forms only a minute inconspicuous swelling at the base of the fifth, which is slender and carries a pair of simple claws. In some of the larger species the tarsal pads are exceedingly broad, especially those of the front feet, *e.g.* in *Doubledaya*.

Antennæ.—The antennæ are composed of eleven joints and are relatively short, except in the males of one extraordinary Indian species, *Macromelea longicornis*, in which they are extremely long. The terminal joints, three in number in the minute species of the CLADOXENINÆ and from three to six in the remainder, are enlarged to form the club, which is of the normal *Clavicorn*

type in the former group, and in the LANGURIINÆ more or less comb-like, being flattened, with the joints dilated more on one side than the other, and rather close together. The variability in the number of joints composing the club is one of the peculiar features of the family. Diversity occurs in species very closely related, which it is obviously impossible to separate generically, and in one instance at least, *Anadastus attenuatus*, the two sexes present a difference in this respect.

The antennæ are attached to the sides of the head just in front of the eyes and above the base of the mandibles and their two sockets are brought rather close together, so that the head is greatly narrowed at this point. The dilatation of the head in certain females, as in the genus *Doubledaya* (fig. 2, p. 4, and fig. 32, p. 165), leaves the distance apart of the antennal sockets unchanged, so that these become completely dorsal in position instead of lateral. From socket to socket extends the clypeal suture, the line of junction between the forehead and the clypeus. The latter forms a small, transverse, more or less rectangular, strip, but is not always symmetrical, the angle on the right side being in some genera (e. g. *Megalanguria*, *Doubledaya*) more prominent than that on the left.

Mouth-parts.—The organs of the mouth have been scarcely at all studied. In his Monograph of the family (Wytsman's 'Genera Insectorum') Fowler says nothing more about them than that they vary little and are not important. Those parts externally visible exhibit some constancy of form, but the maxillæ show differences as great as are to be found in any part of the body, and, as these, perhaps more than any other part, indicate the nature of the food, they are certainly not unimportant.

Beneath and in front of the clypeus and above the mouth is the exsertile labrum, broad, straight or rounded at the anterior margin and always fringed with stiff hairs. The mandibles (fig. 2, *md*) are large and powerful, with strong biting tips, which are equally or unequally bifid. In many females the two mandibles differ in size, the left one being longer than the right, but the tips are rendered capable of apposition by a remarkable extension of the base of the left mandible which produces distortion of the whole head.

The maxillæ (fig. 2, *mx*) terminate in two thickly-fringed lobes, the outer one broad and the inner, in some of the species, tipped by a small sharp tooth. This is the type found in *Cænolanguria*, etc., but in most of the large species, belonging to *Doubledaya*, *Megalanguria* and other genera, the two inner lobes in conjunction constitute very sharp and strong jaws, evidently intended for dealing with very different substances. They are highly chitinised and bear from two to four sharp teeth, usually with chisel-like edges set obliquely. In *Pachylanguria variiventris* there are four teeth forming a strong comb-like structure, in *Doubledaya* three still larger and stronger teeth with broad, sharp edges, and in *Megalanguria* the teeth are two in number, very

large and spoon-shaped, like hollowed lancets. The maxillary palpi are fairly long and the last joint bluntly pointed.

The mentum (fig. 2, *m*) is broad and the ligula has rounded membranous lobes on each side, more or less covering the labial palpi, which are short, the terminal joint sometimes pointed and sometimes truncate and broad at the end.

Eyes.—The eyes are invariably hemispherical in shape, never lenticular as in most ENDOMYCHIDÆ. They stand out prominently at the sides of the head, except in those female forms in which the head is greatly dilated, in which the eyes (fig. 2, *e*), retaining their distance apart, are brought into a different position in relation to the head and have the field of vision greatly restricted by the broad cheeks. Their size remaining the same in these broad-headed individuals, the eyes appear disproportionately small. In the discrimination of the genera the relative size of the facets is of much importance, the eyes being described as either finely or coarsely faceted. These are relative terms whose interpretation may seem to depend upon the individual judgment, but they represent a distinction which the examination through a low-power lens of a few representative Oriental species will soon render apparent. In the genera (e.g. *Cœnolanguria*) in which the eyes are described as coarsely-faceted the cornea of each individual facet is highly convex and the size such that the facets can be counted with slight magnification, the number visible in that part of the upper half of the eye seen when the insect is looked straight down upon being from about 80 to as few as 40 or 50 (in *Epilanguria* and *Paracladoxena*). In the finely-faceted genera, of which *Anadastus* is by far the largest, the cornea of each facet is much less convex and the size is so much less that, there being no corresponding diminution in the size of the whole mass, the same portion of the eye contains at least 160 facets. A passage from one to the other type occurs amongst the African LANGURIIDÆ, but in the Oriental species there is no transition, the species forming two well-marked groups. The great difference in the number and size of the facets must involve considerable difference in the visual faculty and probably also in the habits of the insects. In other groups of beetles, such as the Longicornia, it has been found that finely faceted eyes are indicative of diurnal, and coarsely-faceted of nocturnal, habits; and it is probable that to some extent the same may be said of LANGURIIDÆ, in Africa at least, those with few facets being distinguished by the absence of the bright colouring generally found amongst those with numerous facets; but this is not observable amongst the Indian forms, bright colours being found in many of the former and dull colours in some of the latter type.

Stridulatory organs.—As in many ENDOMYCHIDÆ and EROTYLIDÆ, the upper surface of the head often bears numerous fine transverse ridges so placed that in and out movements of the head cause them to be scraped by a single sharp edge within the

cavity of the prothorax. As in the other families, the apparatus is present in some species and absent in others, suggesting that it is of no vital importance in the economy of the insects, but probably, as in the vocal organs of higher animals, it serves as a method of expressing emotion. The apparatus is found in a well-developed condition in *Megalanguria* and *Cladoxena*, representing opposite extremes of the family. In both genera a pair of narrow ridges may be seen upon the posterior part of the head, where, in the ordinary position, it is concealed within the thoracic cavity. Just within the cavity and parallel to its edge is seen, when the head is removed, a single sharp ridge in a position to scrape the two carinæ upon the head, and the latter, under the microscope, are found to be composed of very fine transverse ridges which, by alternate backward and forward movements of the head, are played upon like the strings of a guitar by the "plectrum" within the thorax. In species of *Anadastus* and other genera, instead of the two parallel carinæ upon the head, a fairly wide median area in the same region is covered with a fine regular striation. In others the whole posterior part of the head is striolated, but the ridges are irregular, comparatively coarse and not concentrated. A surface sculpture of this kind is of very common occurrence in the Coleoptera, and evidently provides the condition from which, in various groups without any near affinity, stridulatory organs of a similar kind have been derived.

Thorax.—The prothorax, although varying greatly in its proportions, is very constant in its conformation. It is generally very convex above in its anterior part but not behind, where there is a transverse depression near the base. With few exceptions the base has a raised margin and immediately within this on each side is a deeply incised fovea (fig. 2, *fov*) consisting of a small orifice with a communicating short channel running forward more or less obliquely for a short distance. The hind angles of the prothorax are almost always very sharply produced and closely applied to the shoulders of the elytra, and the front angles are almost invariably very blunt, although produced in the two apterous species, *Apterodastus piceus* and *A. funebris*.

The scutellum (fig. 2, *s*) is always small and generally short and transverse, and the elytra are long, entirely covering the abdomen. In the majority of genera the lateral portion of each elytron, the epipleura, is sharply divided from the dorsal portion by a groove, the outer wall of which is elevated into a carina, but in certain genera the groove and carina, as I have already mentioned, are absent. The posterior margins of the elytra assume various curious forms in many genera. In numerous American species and a few Oriental ones (*Pachylanguria elongata* and certain closely related forms) they are finely serrate, in *Doubledaya* they may be produced into very sharp spines (*D. splendida*, *forcipata*, etc.) or a little dilated and tufted (*D. collina*). In *Cænolanguria* they are separately rounded, in *Idiolanguria* conjointly rounded, and in *Anadastus* more or less truncate.

The wings, in many genera if not in all, differ from those of the EROTYLIDÆ and ENDOMYCHIDÆ in being brown in colour, and the stridulatory patch found in many representatives of those two families is absent. A few wingless forms (for which the genus *Apterodastus* is here constituted) occur, a fact which, as in the similar cases amongst the EROTYLIDÆ, has not previously been noticed. As usual in Coleoptera which have lost the power of flight, they are distinguished by the shortening of the elytra and hinder part of the body and the sloping shoulders of the former.

The prosternum (fig. 2, *pst*) is long and the front coxæ are placed far back and separated by a backwardly-produced process, which is not united with the episterna, so that the coxal cavities are not closed behind, as they are in the EROTYLIDÆ. The prosternal process does not taper, but is generally rectangular. In *Megalan-guria* (fig. 1, *b*, p. 1) it is forked at the end, the two branches diverging a little. The mesosternum is narrow and generally slopes in front, so that the prosternum slides over it, but in *Idiolanguria* it is elevated and has an abrupt declivity in front, the prosternum fitting closely into an angular notch, so that the thorax appears to be less freely movable than usual. At its hind margin the mesosternum is usually forked and receives a pointed process from the metasternum, projecting between the middle coxæ. Occasionally, as in *Macromelea* and *Languriophasma*, the mesosternum is long, forming a waist which allows considerable flexibility to the body, but more commonly it is short and the segments fit together so closely that little freedom or agility of movement seems possible. The metasternum is always long and the hind coxæ are wider apart than the anterior pairs, being separated by a triangular process at the base of the abdomen, which is received in a notch at the margin of the metasternum.

Abdomen.—In the EROTYLIDÆ “tangential lines,” arising close to the coxal cavities, may be associated with all three pairs of legs. Except in the CLADOXENINÆ (*Microlanguria* and *Thallisel-lodes*) such lines are here found upon the basal sternite of the abdomen only. They take the form of narrow ridges and are of considerable value for distinguishing the species. They are especially characteristic of Oriental LANGURIIDÆ, but do not occur in all the genera. They arise at the point of the process which separates the hind coxæ and penetrates the metasternum and may form short backwardly-diverging lines or, as in *Anadastus*, where they seem to be most developed, may appear as two long parallel ridges close together. They sometimes have the appearance (*e.g.*, in the African *Anadastus murrayi*, Gorrh.) of edges to a depression lying behind the coxæ. Parallel lines similar to those of *Anadastus* occur in *Pachylanguria*, but sharply incised, not raised. In certain species of *Anadastus* and in *Apterodastus*, although the ventral process has marginal lines arising at its apex, these are only carried along the front edge, forming a border to the coxal cavities without emitting backwardly-directed branches.

In *Cænolanguria* these branches, when present, are short and divergent.

The visible ventral segments are five in number and nearly equal in length.

Genitalia.—The female has a long membranous egg-tube or ovipositor, which terminates in a pair of sharp chitinous forceps, each limb of which bears a rod-like tactile appendage just before the point, attached to its outer edge and tipped with a few long sensory hairs. The two limbs of the forceps are broad at the base, and may be very slender and diverge a little at the tip, or, as in *Doubledaya viator*, shorter and convergent at the end.

The ædeagus of the male consists of a pointed and somewhat laterally-compressed chitinous median lobe, moving in a trough or tegmen, to the anterior end of which is articulated a pair of rather long rigid appendages, each terminated by a tuft of bristles, apparently sensory in their function.

Sexual Dimorphism.

In the majority of species of the family the males and females are practically alike externally, but in certain of the larger forms very striking differences occur. When the sexes are dissimilar the males may almost invariably be recognized by their longer legs, and this is most noticeable in the forelegs, which sometimes, as in the genera *Macromelea* and *Lacertobelus*, are extremely attenuated, and may be reduced to an almost hair-like fineness. Very commonly the femora and tibiæ of the front pair of legs are provided in this sex, along the opposed edges, with very minute teeth or spines, placed at intervals in double rows, those upon the tibia generally rather close together and those upon the femur less numerous and farther apart. These teeth interlock when the tibia is folded against the femur, and are evidently designed for gripping. In *Apterodastus metallescens* such minute spines occur upon all the legs. In the Malayan genus *Lacertobelus*, which may very likely be found within our area, a single sharp tooth or a tooth and a rounded lobe on the front femur replace the series of minute spines.

In one singular insect, *Macromelea longicornis* (figs. 44, 45, p. 252), common in Ceylon and Southern India, the elongation of the legs of the male is accompanied by an extreme elongation of the antennæ, a very remarkable phenomenon in a family distinguished by the shortness of these organs, as well as an extension of the prothorax. The result is to produce in this sex an appearance quite foreign to the LANGURIIDÆ. In another single species, *Anadastus attenuatus*, here described for the first time, I have noticed a difference in the number of enlarged (club) joints of the antenna, the male having five and the female six.

A sexual difference also occurs in the breadth of the tarsi, but, contrary to the rule prevailing in the many other groups of beetles in which a similar difference is found, the dilatation, which

in the front tarsus is sometimes very great, indicates not the male, but the female sex.

In those Oriental LANGURIIDÆ in which this dilatation occurs it is accompanied by a still more remarkable female characteristic, namely a distortion of the head on one side. This asymmetry of the female is the most interesting phenomenon presented by the family, and, so far as I am aware, has no exact counterpart in any other insects. In the Coleoptera, asymmetry of the head is known elsewhere only in certain genera of PASSALIDÆ (*Aceraius* etc.), and in these it is common to both sexes and is much less pronounced than in some Indian LANGURIIDÆ. In the latter it is peculiar to the Oriental Region and reaches its greatest development in the genus *Doubledaya*. It is due to the dilatation of the anterior part of the left side of the head, the clypeus and labrum being distorted in conformity. The asymmetry was originally

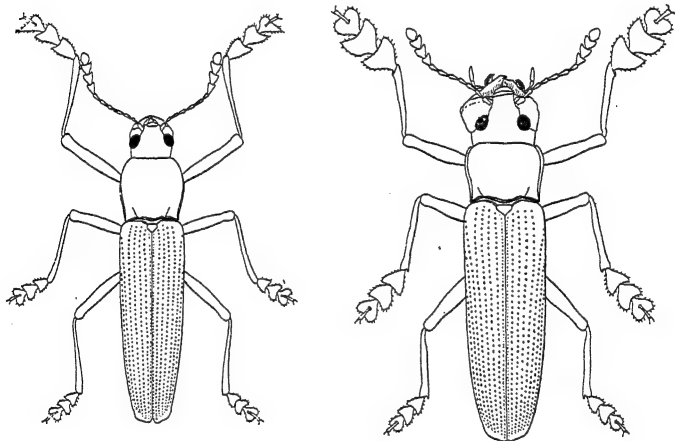


Fig. 31.—*Doubledaya viator*, male.

Fig. 32.—*Doubledaya viator*, female.

described as distinctive of the male, but the supposed males were found by Mr. George Lewis to be really females. Fowler has divided the genera into groups according to the occurrence or non-occurrence of asymmetry, but, irrespective of the inconvenience of a classification applicable to only one sex, his grouping does not correspond with the facts, for the genera referred by him to the asymmetrical category are merely those in which the asymmetry is so marked that it cannot be overlooked. The transition from these to the normal type is quite gradual, and a slight degree of asymmetry may be found in various species not closely related to each other, but which it is not possible to separate generically from entirely symmetrical species. The fact is that, like the more familiar phenomenon of horns and armatures, the asymmetry of the female bears a close relation to the size of the individual. Those species

in which it reaches its maximum are the largest species in the family and the degree of asymmetry is in direct proportion to the size of the specimen. This curious distortion of the head is accompanied by the greater development of the left mandible and also by an alteration in the form of the prothorax, which is shorter and broader in the female than in the male. Combined with the shorter legs and broader tarsi, these sometimes produce a very striking dissimilarity between the two sexes.

A shortening of the prothorax of the female also occurs in other genera, the prothorax of the male, besides being longer, being usually also more convex and more narrowed in front. This is strongly pronounced in the genus *Megalanguria* (see plate I, fig. 12), in which, although it is not very obvious, the head is a little asymmetrical in the male, the clypeus being slightly more produced on the right side than on the left.

The significance of this very unusual feature of asymmetry is unknown. Possibly the unequal development of the mandibles, which always accompanies it in the female, may be found to afford the explanation. The insects being stem-borers in the larval state and the eggs being placed by the mother within the selected stem, it may be that the largest species feed within stems of a stouter and tougher sort than the smaller kinds, and that the preparation for the placing of the egg may require the employment of the mandibles and the exercise of considerable muscular force. The shorter legs, broader tarsi and short, broad prothorax would then be explained as providing a firm base for the operation, while at the same time the dilatation of the left side of the head provides a larger attachment for the muscles of the enlarged left mandible, and also permits the two unequal mandibles to meet at the tips. Careful observation of the operation of oviposition may perhaps supply an explanation of the unequally-developed mandibles.

On the other hand, the variability of these features, their close correlation with size and the parallelism in that respect with so many male secondary sexual characters, seem to place them in the category of what are generally described as "ornaments," although to human eyes the effect produced is decidedly grotesque, if not hideous.

Key to the Subfamilies of LANGURIIDÆ.

- | | |
|---|----------------------|
| Club of the antenna asymmetrical, not moniliform, generally consisting of more than three joints; body very narrow in form | LANGURIINÆ, p. 167. |
| Club of the antenna moniliform, three-jointed, the joints symmetrical (except the basal joint in certain males) and loosely articulated; body generally less narrow | CLADOXENINÆ, p. 253. |

Subfamily LANGURIINÆ.

By far the larger part of the family belongs to this division, which excludes only a few genera, consisting of species of very small size and less linear form than usual and in which the antennæ have a symmetrical club composed of three loosely-connected joints. In the LANGURIINÆ the antennæ vary greatly, but the club is usually less sharply defined and never symmetrical, being a little flattened and projecting more on one side than the other. Sometimes it consists of three joints only, but much more commonly of four or five. The body is always very elongate and generally extremely narrow, with parallel, slightly convergent, or feebly-curved, sides to the elytra. The posterior edges of the latter are sometimes simply rounded, but more often truncate or produced into spines or processes.

Key to the Genera of LANGURIINÆ.

- 1 (10) Elytral epipleuræ undefined.
- 2 (3) Club of the antenna very broad [p. 168.
MEGALANGURIA, gen. n.,
- 3 (2) Club of the antenna less broad
and abrupt.
- 4 (7) Pronotum margined at the base.
- 5 (6) Elytra not acuminate at the
extremity; scutellum not
long [p. 172.
PACHYLANGURIA, Crotch,
- 6 (5) Elytra acuminate at the ex-
tremity; scutellum long [p. 178.
LABIDOLANGURIA, Fowl.,
- 7 (4) Pronotum not margined at the
base. [p. 179.
8 (9) Elytra produced behind PENTELANGURIA, Crotch,
- 9 (8) Elytra not produced behind .. IDIOLANGURIA, gen. n., p. 181.
- 10 (1) Elytral epipleuræ sharply
defined.
- 11 (20) Eyes finely faceted.
- 12 (17) Head dilated in front of the
eyes, asymmetrical in the
female.
- 13 (16) Shoulders of the elytra
tuberculate.
- 14 (15) Tibiæ straight; elytra parallel-
sided, not shining [p. 182.
ANISODEROMORPHA, gen. n.,
- 15 (14) Tibiæ curved; elytra tapering,
very smooth and shining [p. 184.
CELOLANGURIA, gen. n.,
- 16 (13) Shoulders of the elytra
not tuberculate DOUBLEDAYA, White, p. 185.
- 17 (12) Head not dilated in front
of the eyes, symmetrical in
both sexes.
- 18 (19) Extremities of the elytra
separately rounded [p. 203.
LANGURIOPHASMA, gen. n.,
- 19 (18) Extremities of the elytra
not separately rounded ANADASTUS, Gorb., p. 206.

and most peculiar genera in the family. The very broad and abrupt club of the antennæ, the curiously modified head and fore-legs in the male, and the forked prosternum alike render it quite unmistakable, and the blister-like swelling upon each elytron in several of the species is another remarkable feature. The habits of these insects are not yet known, but their powerful build and their very strong and peculiar mandibles and maxillæ indicate a capacity for biting hard substances beyond the powers of most other LANGURIIDÆ.

Key to the Species of MEGALANGURIA.

- 1 (4) Pronotum with a dark longitudinal stripe.
- 2 (3) Elytra not very long, each with a slight swelling behind the middle *metasternalis*, Crotch, p. 169.
- 3 (2) Elytra long, without swelling .. *producta*, sp. n., p. 170.
- 4 (1) Pronotum without a longitudinal stripe.
- 5 (6) Elytra dull, nearly black; abdomen black *melancholica*, sp. n., p. 171.
- 6 (5) Elytra blue, shining; base of the abdomen red *felix*, sp. n., p. 171.

130. *Megalanguria metasternalis*. (Pl. I, fig. 12, ♂.)

Pachylanguria metasternalis, Crotch,* Cist. Ent. i, 1876, p. 378; Fowl., Wytsman's Gen. Insect., Languriinæ, 1908, p. 7, pl. i, fig. 1.

Languria metasternalis, Har., Mitth. Münch. Ent. Ver. iii, 1879, p. 55.

Steel-blue or purple, subopaque, with the sides of the prothorax above and beneath broadly orange-red and a large obliquely oval patch of the same colour upon each side of the metasternum. The head and prothorax are more opaque than the remaining surface.

Rather broad and convex, with the elytra scarcely tapering. The head is finely punctured, a little more strongly upon the clypeus. The pronotum is distinctly but unevenly punctured in the middle, but scarcely perceptibly at the sides; its lateral margins are strongly rounded and the base is a little depressed. The scutellum is smooth, shining and very broadly triangular. The elytra are subopaque, but rather more shining than the head and pronotum, at least in their inner half, closely and very finely punctured, with inconspicuous lines of rather larger punctures, and with a slight swelling beyond the middle on each side; they are rather short and broadly rounded behind, with a minute truncation at the suture. The lower surface is very smooth and shining. The prosternal process is strongly bifurcate, with the points blunt and divergent, the mesosternum is extremely small

and the metasternum rather tumid on each side and impressed in the middle.

♂. The clypeus is as long as it is wide, deeply excised in front, with the right front angle longer than the left. The pronotum is very convex and considerably narrowed in front. The front tibiæ are long, sinuous and clubbed at the end.

♀. The clypeus is transverse and gently excised in front. The prothorax is very short and narrower at its widest part than the elytra at the shoulders.

Length, 15–20 mm.; *breadth*, 5–7 mm.

SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*); Maria Basti (*L. Durel*).

Type in the Cambridge University Museum.

Mr. Stevens has found this species in great numbers. Gorham and Fowler confused several different species under the name *Pachylanguria metasternalis*.

131. *Megalanguria producta*, sp. nov.

Pachylanguria metasternalis, Gorh. (*nec* Crotch) Ann. Mus. Civ. Genova, xxxvi, 1896, p. 258.

Black or dark steely-black, subopaque, with the pronotum, a large patch on each side of the metasternum, and sometimes small patches on each side of the first two or three ventral segments orange-red; the pronotum with a longitudinal median black stripe, a little dilated at the front margin and extending from side to side of the basal margin.

Long and rather narrow, with the elytra even and their sides straight and strongly converging behind. The head and pronotum are rather shining, the head strongly punctured, the clypeus rather closely, with the right angle a little in advance of the left. The pronotum is strongly transverse, strongly punctured in the middle, very finely and sparsely at the sides, with the lateral margins strongly rounded, the base constricted and the hind angles acutely produced. The elytra are very smooth, without trace of swelling behind the middle, subopaque, with rows of extremely fine punctures, the shoulders sharply prominent, the sides straight and strongly convergent and the extremities truncate. The prosternal process is long and bifid behind, with the points blunt and scarcely divergent. The mesosternum is also strongly bifid behind and the metasternum is pointed in front to correspond.

♂. The clypeus is as long as it is broad, angularly elevated at the middle of the front margin, with the angles blunt laterally. The pronotum is extremely convex, as broad in the middle as the elytra at the shoulders and strongly narrowed at the base. The front legs are elongate and their tibiæ attenuate beyond the middle, and the middle tibiæ have an angular inwardly-directed process at the extremity.

♀. The clypeus is transverse and very feebly sinuate at the

front margin. The pronotum is short, narrower in the middle than the elytra at the shoulders and about as broad at the base, the angles being acutely produced.

Length, 14–20 mm.; *breadth*, 5–6.5 mm.

BURMA: Karen Hills (*W. Doherty*); Ghecu (*L. Fea*, March).

INDO-CHINA: Upper Meekong R., Ban Pan, Vien Poukha, Pou Lan, Ban Silah, Luang Prabang (*R. Vitalis de Salvaza*, Nov., Mar., April, May).

This resembles the Sumatran *P. potatoria*, Wied., in its smooth, long and tapering elytra and in the coloration of the thorax, but the elytra are nearly black and dull instead of shining. The deep emargination of the mesosternum behind is a peculiar feature of these two species.

132. *Megalanguria melancholica*, sp. nov.

Black, with the elytra very dark blackish-purple, and the pronotum decorated just beyond the middle with a very irregular blood-red transverse band, narrow or interrupted in the middle, toothed anteriorly and posteriorly on each side (and sometimes also in the middle) and broad at the outer margins. The metasternum has also an irregular blood-red patch on each side.

Dull and opaque above and beneath, rather broad and massive, the elytra having each a slight swelling behind the middle, their sides rather straight and gently converging from the shoulders. The head is distinctly punctured, the clypeus rather closely, and the right angle of the latter is a little in advance of the left. The pronotum is transverse, finely punctured in the middle, smooth at the sides, the lateral margins are rounded, the front angles blunt, the hind angles acute, the base very finely margined and the lateral foveæ minute but distinct. The elytra are very minutely punctured, with indistinct rows of rather stronger punctures, the shoulders are prominent and the extremities slightly emarginate. The prosternal process is moderately long, deeply grooved on each side and bilobed behind.

♂. The clypeus is as long as it is wide and rather strongly bilobed. The pronotum is very convex, narrowed in front and not much wider than it is long. The front legs are long and the tibiæ bisinuate.

♀. The clypeus is transverse and feebly emarginate in front. The pronotum is strongly transverse and not very convex.

Length, 16–18 mm.; *breadth*, 5.5–6.5 mm.

ASSAM: Naga Hills, Manipur (*W. Doherty*); Shillong (*F. Schneider*).

Type in the British Museum.

133. *Megalanguria felix*, sp. nov.

Deep blue, with the elytra bright shining blue and the pronotum, except a large patch, bilobed behind, adjoining the front margin and a narrow posterior marginal border, bright red or

yellow. The sides of the prothorax beneath, an irregular patch at the middle of the metasternum and the first two ventral sternites (the 2nd with a small dark median spot) are also bright red or yellow.

Moderately elongate, opaque in front and shining behind. The head is moderately punctured, with the clypeus rather narrow. The pronotum is scarcely perceptibly punctured at the sides and strongly but not closely in the middle; it is short, well rounded and narrowed in front, broad and not much depressed at the base. The elytra are shining, and bear well-marked lines of fine punctures and very fine irregular punctures in the intervals; there is an extremely faint swelling on each side beyond the middle, the sides are straight and convergent from the shoulders backwards and the extremities are minutely excised, with distinct sutural and external angles. The prosternal process is long, deeply sulcate on each side, bifurcate behind, with the points diverging a little, the metasternum is very feebly and sparsely punctured and the abdomen finely and closely.

♂. The clypeus is strongly bilobed and asymmetrical, the pronotum is more convex and less shining than that of the female, the front legs are a little elongate and the front and middle tibiae sinuous.

Length, 16–17.5 mm.; breadth, 5 mm.

ASSAM: Patkai Hills, Sadiya (*W. Doherty*); Garo Hills, above Tura, 3500–3900 ft. (*S. Kemp*, Sept.); Cachar (*J. Wood-Mason*).

Type in the British Museum.

This species has the elongate form of *M. producta*, but that has the head and thorax shining and the elytra opaque, whereas in *M. felix* the anterior part is opaque and the elytra are bright and shining. The dark leaflike mark upon the front half of the thorax is also peculiar. In one specimen its hinder part consists of two detached spots.

Genus **PACHYLANGURIA**.

Pachylanguria, Crotch, Cist. Ent. i, 1876, p. 377.

Tetralanguria, Crotch, *op. cit.* p. 378. (Type, *Languria splendens*, Wied.) (new syn.)

Metabelus, Gorh., Proc. Zool. Soc. Lond. 1887, p. 361. (Type, *Pachylanguria borrei*, Fowl.) (new syn.)

Languriomorpha, Gorh., *l.c.* (Type, *Languria lewisi*, Crotch.) (new syn.)

TYPE, *Pachylanguria paivæ*, Woll. (N. China).

RANGE. Indo-Malayan Region, Siam, China, Japan.

Elongate in shape, with short legs and antennæ, the latter with an abrupt four-jointed club, of which all the joints are transverse. Eyes finely faceted, with an orbital prominence behind. Vertex sometimes bearing a pair of stridulatory files (*P. tumidicollis*, Kr.), which are most often atrophied. Prothorax with a well-marked entire basal margin. Scutellum not very short, sharply angulate behind. Elytra without humeral (epipleural) groove or carina, the

apical margins rounded or slightly truncate and sometimes finely serrate (*P. elongata*, *variiventris*, etc.). Coxæ not far apart. Prosternum a little produced behind the front coxæ and truncate or broadly bifurcate, with a deep lateral groove on each side. First ventral sternite with long or short coxal lines. Tarsi moderately broad, the first joint a little longer and narrower than the next. Mandible bifid at the tip. Inner lobe of the maxilla bearing three long slender teeth not very closely set; outer lobe broad and triangular; palpi rather long. Ligula broadly bilobed; labial palpi clavate.

The pronotum of the male is more convex, longer and more narrowed anteriorly than that of the female.

Key to the Species of PACHYLANGURIA.

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|----|--|-------------------------------------|
| 1 | (6) Shoulders not prominent, embraced by the hind angles of the thorax. | |
| 2 | (5) Sides of the pronotum not indented. | |
| 3 | (4) Lower surface red, with the terminal segment dark | <i>elongata</i> , F., p. 173. |
| 4 | (3) Lower surface without entirely red segments | <i>variiventris</i> , Kr., p. 174. |
| 5 | (2) Sides of the pronotum indented in the middle | <i>tumidicollis</i> , Kr., p. 175. |
| 6 | (1) Shoulders prominent (very little in <i>P. collaris</i>), not embraced by the hind angles of the thorax. | |
| 7 | (10) Elytra very narrow at the tips. | |
| 8 | (9) Pronotum narrowing from base to front margin; club of the antenna rather short and broad .. | <i>cuprea</i> , sp. n., p. 176. |
| 9 | (8) Pronotum broad in front; club of the antenna long and narrow | <i>humeralis</i> , sp. n., p. 177. |
| 10 | (7) Elytra shorter, not very narrow at the tips. | |
| 11 | (12) Pronotum not strongly transverse, narrowing from base to front margin | <i>impressicollis</i> , Kr., p. 177 |
| 12 | (11) Pronotum strongly transverse, not narrowing from base to front margin | <i>collaris</i> , Crotch, p. 178. |

134. *Pachylanguria elongata*.

Trogosita elongata, F., Syst. Eleuth. i, 1801, p. 152.

Languria tripunctata, Wied., Zool. Mag. ii, 1, 1823, p. 46.

Languria splendens, id., l. c.

Languria pyramidalis, MacL.,* Annulosa Javan. 1825, p. 44.

Languria angularis, Motsch., Schrenck's Reisen im Amurl. ii, 1860, p. 243.

Tetralanguria elongata, Fowl., Wytsman's Gen. Insect., Languriinæ, 1908, p. 10, pl. i, fig. 5; Gorh., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 259 (part).

Dark metallic blue, green or coppery, with the antennæ black and the prothorax and lower surface bright red, except the

prosternal process, the mesosternum, the last ventral sternite and paired spots upon the anterior segments, which are dark. The pronotum is generally narrowly black at its front and hind margins and may have in addition a median dark spot and a smaller one on each side (var. *tripunctata*). These spots may coalesce and the dark pigment may extend also to the front and hind margins, leaving only the four corners red (var. *crucicollis*), or may cover the entire pronotum.

The body is long and narrow and very smooth and shining, with short legs and antennæ. The head is strongly and rather closely punctured, the pronotum moderately strongly in the middle but very feebly towards the margins, the sides are nearly parallel, the front angles blunt and not produced, the hind angles very acutely produced and closely applied to the shoulders, the base with a roundish depression or pit in the middle and the lateral foveæ minute. The scutellum is smooth, slightly transverse and sharply pointed. The elytra bear distinct but not strong lines of punctures, with numerous finer punctures in the intervals; the shoulders are not apparent, the sides are straight and convergent, and the apices finely and irregularly serrate, rounded or indistinctly truncate. The lower surface is rather finely and sparsely punctured and the basal abdominal sternite bears parallel coxal lines. The third joint of the antenna is rather long and the last four are rather strongly transverse.

♂. The pronotum is slightly elongate, narrowed in front and more convex than that of the female.

♀. The pronotum is subquadrate and a little transverse.

Length, 12–17 mm.; *breadth*, 2.5–4.5 mm.

SIKKIM: Mungphu (*E. T. Atkinson*); Nurbong (*H. Stevens*).
BENGAL: Rungpur. ASSAM: Chandkhira, Sylhet (*J. H. Sherwill*).
BURMA: Ruby Mines (*W. Doherty*); Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.). TENASSERIM: Tavoy (*W. Doherty*).
SIAM. MALAY PENINSULA. SUMATRA. JAVA. BORNEO.

Type in the Copenhagen Museum.

This is an extremely abundant, wide ranging and variable insect, with a marked tendency to form geographical races with a distinctive coloration in different parts of its area of distribution. Although many of these forms have been named as distinct species, they are very inconstant and merge one into another; but Gorham and Fowler have gone much too far in regarding the genus as consisting of a single species only.

135. *Pachylanguria variiventris*.

Tetralanguria variiventris, Kraatz,* Deutsche Ent. Zeitschr. 1899, p. 348.

Tetralanguria elongata, Gorh., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 259; Fowl., Wytsman's Gen. Insect., Languriinæ, 1908, p. 10 (part).

Dark metallic blue or green, with the antennæ black and the

pronotum, except a broad irregular dark median stripe, dilated at the front and hind margins, and a spot at the middle of each lateral margin, the prothoracic episterna, the anterior part of the metasternum and the first two abdominal sternites, the intercoxal process and a pair of united spots at the anterior margin of each excepted, bright red.

Elongate, moderately robust, with short antennæ and legs, and very smooth and shining. The head is strongly and closely punctured, the pronotum strongly in the middle and very lightly at the sides, with a light triangular impression in the middle of the base. The sides of the pronotum are almost parallel, rounded in front, with the front angles slightly produced and the hind angles very acutely produced, and closely applied to the shoulders of the elytra; there is generally, but not always, a roundish pit or depression in the middle of the base and the lateral foveæ are minute. The scutellum is transverse and acutely pointed behind. The elytra bear longitudinal rows of not very strong punctures, with numerous finer punctures in the intervals; the sides are straight and slightly convergent and the apices rounded or feebly truncate. The prosternum is transversely wrinkled, the metasternum is scarcely punctured and the abdomen fairly closely, the basal sternite bearing short parallel coxal lines.

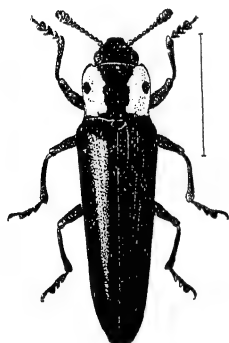


Fig. 33.—*Pachylanguria variiventris*.

Length, 13–19 mm.; breadth, 3–5 mm.

DARJEELING: Nurbong, 2050 ft. (*H. Stevens*, June). ASSAM: Khasi Hills, Shillong (*F. Schneider*). BURMA: Karen Hills, Cheba, 1200–3300 ft. (*L. Fea*, April, Dec.). TENASSERIM: Thagata (*L. Fea*, April). TONKIN.

Type in the Berlin Entomological Institute.

The dark median stripe of the pronotum is occasionally reduced to a small central spot but, unlike that of *P. elongata*, this spot seems almost invariably to show a tendency to longitudinal elongation.

136. *Pachylanguria tumidicollis*.

Tetralanguria tumidicollis, Kraatz,* *Deutsche Ent. Zeitschr.* 1899, p. 349.

Coppery- or greenish-black, with the prothorax blood-red, except at the front and hind margins (and sometimes a broad longitudinal median stripe) and the prosternal process, which are dark. The sides of the abdomen beneath and sometimes the greater part of the metasternum and first sternite are red.

Rather long and slender, with the prothorax and elytra very closely co-adapted, the sides straight and the elytra tapering. The head is rather strongly punctured, with a pair of well-developed stridulatory files on the vertex. The pronotum is quadrate, about as long as it is wide, rather strongly punctured except at the sides, with the lateral margins nearly straight but the sides indented by a transverse groove on each, the front angles distinct but blunt, the hind angles strongly produced, the base evenly margined and the basal foveæ minute. The scutellum is smooth, transverse and sharply pointed. The elytra are closely punctured, with indistinct rows of larger punctures, and the apices are rounded and a little flattened. The lower surface is rather evenly punctured, and the basal ventral sternite has the coxal lines long and parallel.

Length, 14·5–18 mm.; *breadth*, 3–4 mm.

ASSAM: Khasi Hills, Chandkhira, Sylhet (*J. L. Sherwill*).

Type in the Berlin Entomological Institute.

137. *Pachylanguria cuprea*, sp. nov.

Bright coppery, very shining, with the lower surface and the base of the legs reddish-chestnut, with a greenish metallic suffusion, and the antennæ and the remainder of the legs blue-black.

Not very elongate in shape, the shoulders very prominent and the elytra strongly tapered from shoulders to apices. The head is strongly punctured, the pronotum a little less strongly and closely, little longer than it is broad, narrow at the base but a little tapered to the front, with the sides scarcely rounded, the front angles rather sharp, the hind angles acute but scarcely produced, the base narrowly margined, transversely impressed between the lateral foveæ, which are deeply impressed, almost parallel but not long. The scutellum is smooth, slightly transverse and acutely pointed. The elytra are rather strongly punctured in rows, with minute scattered punctures in the interstices; the shoulders are very prominent, the sides strongly convergent and the apices rounded, with the sutural angle sometimes minutely spined. The lower surface is finely and rather uniformly punctured, the prosternal process broadly bifid, the 1st ventral sternite with rather short parallel coxal lines. The legs and antennæ are short and the last four joints of the latter rather short and broad.

Length, 11–12 mm.; *breadth*, 3 mm.

UNITED PROVINCES: Mussoorie, 6000–7000 ft. (*Col. Harcourt*, Sept.); Kumaon, W. Almora, Naini Tal, 7000–8000 ft. (*H. G. Champion*). ASSAM: Manipur (*W. Doherty*). BURMA: Ruby Mines (*W. Doherty*). SIKKIM: Pedong (*A. Desgodins*, Oberthür Coll.).

Type in the British Museum.

138. *Pachylanguria humeralis*, sp. nov.

Deep shining brassy-green, with the lower surface and the base of the femora orange-red, and the antennæ and the rest of the legs black.

Small and narrowly elongate, with the elytra very broad and prominent at the shoulders, straight-sided and strongly tapering to the apex. The head is strongly punctured, the pronotum less strongly and closely, rather small, with the sides nearly parallel, the front angles rounded, not produced, the hind angles acute but scarcely produced and not adapted to the shoulders, the base finely margined and transversely impressed between the lateral foveæ, which are deep, short and parallel. The scutellum is smooth, not transverse, acutely pointed behind. The elytra are strongly punctured in rows, with irregular rows of fine punctures in the intervals; they are a little elevated just behind the base, and the apices are a little flattened and obliquely and irregularly truncate. The lower surface is very finely and sparsely punctured, the prosternal process is truncate and the first ventral sternite is without coxal lines. Joints 3 to 7 of the antenna are elongate, joint 3 distinctly longer than the rest, and the last four form a rather long and narrow club, of which joints 8 and 11 are a little longer than wide.

Length, 7-8.5 mm.; *breadth*, 1.5-2 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

139. *Pachylanguria impressicollis*.

Tetralanguria impressicollis, Kraatz,* *Deutsche Ent. Zeitschr.* 1899, p. 350.

Dark metallic green, very smooth and shining, with the sides of the pronotum and the lower surface, except the mesosternum and the last ventral sternite, deep blood-red.

Moderately elongate, not very narrow nor strongly tapering behind, with short legs and antennæ. The head is strongly but not very closely punctured and the pronotum similarly punctured, except at the sides, which are nearly smooth. The lateral margins of the pronotum converge from the base forwards, the front angles are blunt, the hind angles acute but not much produced, the base deeply transversely impressed between the lateral foveæ and distinctly lobed in the middle, and the marginal stria interrupted at the middle of the lobe. The elytra are rather broad and not very long, distinctly but unequally punctured in longitudinal rows, the shoulders are very prominent and not closely embraced by the hind angles of the prothorax, the sides straight and slightly convergent, and the extremities jointly rounded and not very narrow. The prosternum is transversely wrinkled anteriorly, the metasternum and abdomen are sparingly punctured and the basal sternite of the latter bears very short parallel coxal lines.

Length, 16 mm.; *breadth*, 4 mm.

ASSAM: Naga Hills.

Type in the Berlin Entomological Institute.

I have seen only the single type-specimen of this well-marked species. The antennæ are broken.

140. *Pachylanguria collaris*.

Pachylanguria collaris, Crotch,* Cist. Ent. i, 1876, p. 377.

Languria punctata, Har., Mitth. Münch. Ent. Ver. iii, 1879, p. 58.

Steel-blue, moderately shining, with the prothorax bright orange-red, except its front and hind margins narrowly, a small spot in the middle and one on each side a little before the middle, which are black, and the prosternal process and parts adjacent to the coxæ, which are blue-black. There is a deep blood-red spot on each side of each ventral sternite. The small lateral spots, and less frequently the median one, may be absent.

The body is not very narrowly elongate and does not appreciably taper behind. The head is strongly and closely punctured, the pronotum rather more finely and sparingly. The latter is short and transverse, moderately convex, with the sides strongly rounded in front, feebly narrowed behind, the front angles blunt and not produced, the hind ones acutely produced, the base with a sharply-defined broadly triangular flattening and a well-marked margin, and the lateral foveæ short but distinct. The scutellum forms an equilateral triangle, with rounded anterior angles and sharp apex. The elytra are finely and rather closely punctured, with larger punctures forming rather inconspicuous lines; their sides are almost parallel, the shoulders slightly prominent and the extremities conjointly rounded. The pronotum is finely transversely wrinkled in front and the metasternum and abdomen are finely punctured, the latter densely. The antennæ are short and stout, the club abrupt and moderately broad and compact.

Length, 12–16 mm.; *breadth*, 3–4 mm.

DARJEELING DISTRICT: Mahanuddi Valley, Nurbong (*H. Stevens*).

Type in the Cambridge University Museum.

This species has a deceptive resemblance in its colour and pattern to the var. *tripunctata* of the very common and wide-ranging *P. elongata*, F., but it is a shorter and stouter insect and the coloration of the lower surface is quite different.

The pale variety, in which the three black spots upon the prothorax are wanting, was described by Harold as *L. punctata*.

Genus LABIDOLANGURIA.

Labidolanguria, Fowler, Wytzman's Gen. Insect., Languriinæ, 1908, p. 9.

TYPE, *Labidolanguria mucronata*, Fowl.

Range. South India.

Eyes lateral, large and prominent, rather coarsely faceted, with the eye-wall rather prominent behind. Antennæ short,

joints 3, 4 and 5 feebly elongate, 6 and 7 short and the last four abruptly dilated, strongly transverse and compact. Prothorax longer than broad, cylindrical, margined at the base, with the hind angles acutely produced and closely applied to the shoulders of the elytra. Scutellum pointed, not transverse. Elytra without a humeral carina, the apices acutely produced. Legs not long and tarsi not broadly dilated.

Only one species is known.

141. *Labidolanguria mucronata*.

Labidolanguria mucronata, Fowl,* Wytsman's Gen. Insect., Languriinæ, 1908, p. 10, note, pl. i, fig. 4.

Brilliant brassy or brassy-green, with the antennæ and tarsi blue-black.

Rather narrowly elongate. The head and pronotum are strongly and deeply punctured, the latter with the sides nearly straight and feebly converging to the front, the front angles blunt and not produced, the hind angles very acutely produced, the base strongly margined and the lateral foveæ deeply incised. The scutellum is pentagonal; not transverse. The elytra bear rows of strong punctures, with intermediate rows of finer and less regular punctures; the apices are sharply acuminate, the sutural angles being represented by a minute spine on each side near the point of divergence of the apices. There are very large and deep punctures upon the prosternum just in front of the coxæ, upon the prothoracic episterna and the mesosternum, and finer punctures upon the metasternum and abdomen.

Length, 10–12 mm.; *breadth*, 2–3 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

Genus PENTELANGURIA.

Pentelanguiria, Crotch, Cist. Ent. i, 1876, p. 380; Fowler, Wytsman's Gen. Insect., Languriinæ, 1908, p. 8.

TYPE, *Pentelanguiria elateroides*, Crotch.

Range. N. India.

Eyes lateral, large and prominent, rather coarsely faceted, with the eye-wall rather prominent behind. Antennæ short and stout, the third joint very slightly elongate, the remainder very short, the last five very short and transverse, forming a moderately compact club, the last four of equal width. Pronotum larger than it is wide, strongly margined at the sides but not at the base, with the front angles prominent but blunt, the hind angles very acutely produced and closely applied to the shoulders of the elytra, and the lateral foveæ minute and punctiform. The scutellum is triangular and acutely produced behind. The elytra are without a humeral carina and the apices are produced but

bluntly rounded. The legs are rather short and the tarsi not very broad.

I know only the type species of the genus. Crotch included in it a second species *P. notopedalis*, based upon a specimen which cannot be traced. His very brief Latin description is reproduced below in English, but appears too meagre for the recognition of the insect.

142. *Pentelanguria elateroides*.

Pentelanguria elateroides, Crotch,* *l. c.*; Fowl., Ann. Soc. Ent. Belg. xxxvii, 1893, p. 75; id., Notes Leyd. Mus. ix, p. 125; id., Wytsman's Gen. Insect., Languriinæ, 1908, pl. i, fig. 2.

Coppery and very brilliant, with the metasternum and abdomen beneath red, except the middle of the former, the last segment of the latter and a large patch at the base of each sternite, which are greenish-black. The basal part of the femora is also bright red.

Narrowly elongate, with the head and pronotum rather strongly and closely punctured, the sides of the latter straight and gently convergent to the front, the anterior angles a little produced and thickened but blunt, the posterior angles very acute. The elytra are closely punctured with larger and smaller punctures, of which the larger are arranged in not very well-marked longitudinal rows; the sides are straight and convergent and the apices a little produced and bluntly rounded, a sharp spine at the inner edge just before the apex representing the sutural angle. The lower surface is very smooth and shining, with the sides of the pro- and meso-sterna very coarsely rugose. The prosternum is strongly produced, rounded behind and deeply striated on each side. The intercoxal process of the first abdominal sternite is also striated on each side, and the striæ are parallel behind but little produced.

Length, 14–20 mm.; *breadth*, 3–4 mm.

ASSAM: Kurseong (*P. Braet*). SIKKIM: Maria Basti, Pedong (*L. Durel*); Darjeeling (*H. Frühstorfer*, June).

Type in the Cambridge University Museum.

In redescribing this species, Fowler has wrongly referred to the type as taken by Sir J. Hooker.

143. *Pentelanguria notopedalis*.

Pentelanguria notopedalis, Crotch, *l. c.*

"Green, very shining, with the head and thorax sparsely and strongly punctured (subrugosely at the sides of the latter); elytra very closely subserially punctured; body beneath lightly punctured, with red markings.

Length, 8 lines.

HIMALAYAS (*Hooker*.—Coll. Janson)."

I have been unable to recognize this species. According to

Mr. O. E. Janson, the type should be found in M. René Oberthür's collection, together with other specimens formerly belonging to his father, but M. Oberthür has sought for it in vain.

Genus **IDIOLANGURIA**, nov.

TYPE, *Tetralanguria opaca*, Kr.

Range. Assam.

Rather narrowly elongate, but with prominent shoulders. Eyes finely faceted. No distinct stridulatory files. Antennæ short, with joints 3 to 6 slightly elongate, 7 as broad as it is long and the last four strongly transverse, forming an abrupt, compact and rather broadly oval club. Pronotum not contracted but dilated at the base, without basal margin and with the lateral sutures almost obliterated in the middle; basal foveæ transverse. Elytra with the epipleuræ undefined, tapering from the shoulders to the extremities, which are jointly rounded or sub-truncate. Prosternum strongly produced behind, forming a rounded lobe. Mesosternum very short, bilobed behind, excised and abruptly declivous in front, closely fitting the prosternal process. First ventral sternite with rather short parallel coxal lines. Legs not long; the tarsi moderately broad. Mandible short, stout, bifid at the tip. Inner lobe of the maxilla armed with three sharp, rather long, teeth at the tip; outer lobe short and rounded; palpus not long. Ligula narrow; labial palpi very short.

Two or three peculiar features render it necessary to constitute a separate genus for Kraatz's *Tetralanguria opaca*. The absence of a complete basal margin to the pronotum and the partial obliteration of the lateral margins are the most evident. The shape of the mesosternum, with its abrupt anterior declivity closely fitting the prosternal process, is peculiar and the mentum is also of unusual shape. The opacity of the elytra and the almost complete disappearance of linear puncturation are unusual, although found also in *Megalanguria*, and the broad, abrupt antennal club also resembles that of the same genus. The antennæ are missing in the single specimen from which the only known species was described by Kraatz, and were not referred to by him.

144. *Idiolanguria opaca*.

Tetralanguria opaca, Kraatz,* Deutsche Ent. Zeitschr. 1899, p. 350.

Deep blue or violet, almost black upon the head, legs and lower surface, with the prothorax (except the posterior median part beneath), the middle of the metasternum and the first three ventral sternites (each with a dark median basal patch) bright orange-red.

Very elongate, with the shoulders rather prominent and the sides converging anteriorly and posteriorly. The head is rather small, strongly punctured, with the eyes separated by about

four times their radius. The pronotum is about as long as its width at the base, where it is widest, rather strongly punctured in the middle, feebly at the sides, transversely constricted in the middle, with the front angles strongly rounded, the hind angles acute, the base broadly lobed in the middle and the lateral foveæ transversely punctiform. The elytra are coriaceous and subopaque, with hardly perceptible lines of punctures; their shoulders are

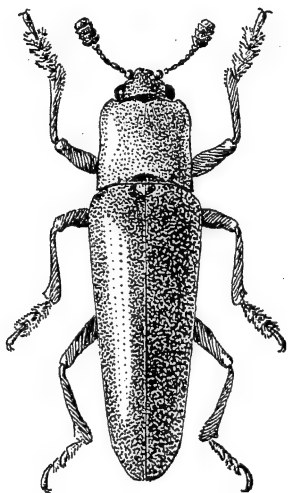


Fig. 34.—*Idiolanguria opaca*.

rather prominent, the sides straight and convergent from the shoulders to near the extremities, which are conjointly rounded. The lower surface is very shining, the pro- and meta-sterna almost unpunctured and the abdomen finely and closely punctured.

Length, 16-20 mm.; *breadth*, 4-5 mm.

ASSAM: Naga Hills, Manipur (*W. Doherty*).

Type in the Berlin Entomological Institute.

Genus **ANISODEROMORPHA**, nov.

TYPE, *Anisoderomorpha tuberculata*, sp. nov.

Range. Burma.

Cylindrical, very parallel-sided. Head dilated beneath. Eyes not large, finely faceted. Antennæ placed rather close together, short, not slender, with the first five joints elongate, the 3rd distinctly longer than the rest, the 6th about as broad as long, the last transverse, fairly compact. Clypeus asymmetrical, depressed on each side. Mandibles strong, bifid at the end. Maxilla rather feebly chitinous, the inner lobe armed with three minute blunt teeth at the tip. Ligula entirely membranous, labial palpi broadly truncate at the end. Prothorax subquadrate, with the sides nearly

straight, but feebly convergent behind, and all the angles almost rectangular, the base finely margined and the lateral foveæ minute but distinct. Front coxal cavities very narrowly open. Prosternal process forming a rounded deflexed lobe behind the coxæ. Mesosternum hollowed, bilobed behind. Metasternum acutely notched between the hind coxæ. Scutellum pentagonal, rather narrow. Elytra parallel-sided, very straight, the shoulders prominent, each with a strong erect tubercle dorsally, the apical margins evenly and conjointly rounded. Abdomen with the first four ventral sternites bearing a deep pit on each side.

♂. The legs are fairly stout, not long, the tarsi moderately dilated and fairly long. The head is almost symmetrical. The prothorax is a little longer than it is wide, not narrowed in front and very little behind.

♀. Unknown.

145. *Anisoderomorpha tuberculata*, sp. nov.

Black, shining, with the elytra and the abdomen (except at the base) reddish-chocolate, finely punctured and subopaque.

Moderately elongate, very parallel-sided. The head is finely and sparingly punctured. The pronotum is finely and irregularly punctured, very convex in front, feebly narrowed from the front to the hind margin, with all the sides nearly straight and the angles nearly rectangular but not acute. The scutellum is smooth and a little hollowed. The elytra are deeply striated, the striae deeply, not very regularly, sometimes confluent, punctured and the intervals rugulose and minutely and rather closely punctured. The prosternum is transversely striated, the mesosternum coarsely and closely punctured, the metasternum finely and not closely and the abdomen beneath rather closely. There are no coxal lines except at the apex of the intercoxal process.

Length, 17 mm.; breadth, 4 mm.

BURMA: Ruby Mines (W. Doherty).

Type in the British Museum.

I know only a single male specimen of this very peculiar insect. The female will probably be found to have the head asymmetrically dilated and the prothorax shorter and broader.

In its coloration and general appearance there is some resemblance to *Anisodera* and other Hispid genera occurring in the same region. The very quadrate prothorax, the roughly sculptured elytra and humeral processes and other features make it one of the most isolated forms amongst the LANGURINÆ.

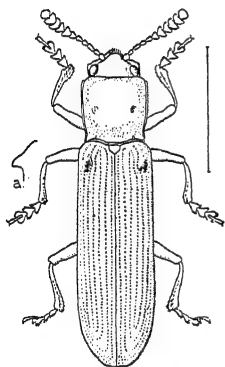


Fig. 35.—*Anisoderomorpha tuberculata* and (a) profile of shoulder-prominence.

Genus **CELOLANGURIA**, nov.

TYPE, *Celolanguria curvipes*, sp. nov.

Range. South India.

Moderately elongate, tapering from shoulders to apex of the elytra (which are very smooth and shining), with the legs fairly stout, all the tibiæ curved and rather closely fringed at the inner edge, the tarsi rather broadly dilated and the basal joint much longer than the second. Head a little dilated beneath, symmetrical, with the eyes moderately large and finely faceted. Antennæ not very short, the first six joints elongate, the last five forming a long club. Clypeus long, narrow, symmetrical. Mandible produced at the tip and bifid. Maxilla with the inner lobe rather short, armed with three minute close teeth at the tip, inner lobe very broad, palpus long. Ligula not very broad. Labial palpi with the terminal joint very broadly hatchet-shaped, the foot-stalk very fine. Prothorax subquadrate, a little shorter than wide, with the front angles blunt, the hind angles acutely produced, the base margined and the lateral foveæ long and deep. Scutellum transverse. Elytra with the basal margin elevated, each shoulder with a minute dorsal tubercle, the extremities truncate, with sharp sutural and external angles. Prosternal process rather long, flat, gently emarginate behind, with sharp angles. Mesosternum narrow, deeply notched behind. Metasternum deeply notched to receive the ventral process. Basal sternite of the abdomen with a pair of long and close carinæ, nearly parallel but diverging a little behind and extending to three-fourths the length of the segment.

146. *Celolanguria curvipes*, sp. nov.

Brilliant metallic green or golden-green, including the legs and antennæ, with the head and prothorax bright red.

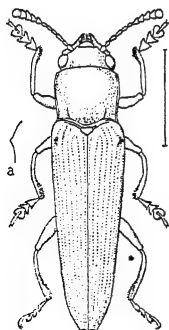


Fig. 36.—*Celolanguria curvipes* and (a) profile of shoulder-prominence.

Rather long and narrow, very smooth and shining above and thinly clothed with pale hair beneath. The head is very finely and sparsely punctured. The pronotum is almost unpunctured, but there is a patch of large, deep and close punctures in the middle of the base; its sides are almost straight and parallel, but very feebly contracted a little before the hind angles, which are very sharp, the front angles rectangular but not sharp; the base has a strongly-elevated margin and is broadly lobed in the middle, and the lateral foveæ are deep and divergent. The scutellum is broad and obtusely angular. The elytra bear rows of large deep punctures, which become faint at the base and extremity, the shoulders are not prominent, the epipleuræ are very

sharply defined and the inner and outer apical teeth are minute but sharp. The lower surface, like the upper, is very brilliant, with scattered shallow setigerous punctures.

Length, 13.5 mm.; *breadth*, 3 mm.

S. INDIA: Travancore (*R. S. Imray*); Cochin State, Kavalai, 1300–3000 ft. (*F. H. Gravely*, Sept.).

Type in the British Museum.

I have seen only female specimens of this insect. Superficially it rather resembles *Doubledaya schenklengi*, which occurs in the same locality, but the tuberculate shoulders, the curved tibiae and other features, exclude it from all known genera. The very slight degree of asymmetry of the head in the two specimens examined probably indicates that a larger size may be attained. The male may be expected to differ in important respects.

Genus DOUBLEDAYA.

Doubledaya, White, Proc. Ent. Soc. Lond. 1850, p. 13; id., Trans. Ent. Soc. Lond. (ser. 2), ii, 1852, p. 2; Crotch, Cist. Ent. i, 1876, p. 381; Lewis, Journ. Linn. Soc., Zool. xvii, 1883, p. 354; Gorh., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 263.

Languriosoma, Crotch, Cist. Ent. i, 1876, p. 379. (Type, *L. mouhoti*, Crotch.) (new syn.)

Coptolanguria, Gorh., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 261; id., Ann. Soc. Ent. Belg. 1903, p. 341. (Type, *C. dilatipes*, Gorh.) (new syn.)

Cosmolanguria, Kraatz, Deutsche Ent. Zeitschr. 1899, p. 352. (Type, *C. ruficollis*, Kr.) (new syn.)

Glyphilanguria, Fowl., Wytsman's Gen. Insect., Languriinae, 1908, p. 14. (Type, *G. andrewesi*, Fowl.) (new syn.)

TYPE, *Doubledaya viator*, White.

Range. Japan, Indo-Malayan Region, Ceylon.

Eyes very finely faceted. Head strongly dilated beneath on each side, making the eyes more or less dorsal in position, the dilatation very pronounced in the female. Antennæ slender, but not very long, with the club three- or four-jointed and very loosely articulated. Inner lobe of the maxilla armed with three sharp teeth placed obliquely, very stout and chisel-shaped in the larger species (*D. viator*, *varians*, etc.), minute and spiniform in smaller species. Prothorax very dissimilar in shape in the two sexes, longer, strongly rounded at the sides in the male and contracted in front and behind, short in the female and broad at the front margin. Elytral epipleuræ defined by a well-marked groove, the posterior margins truncate or acuminate externally.

Legs very slender in the male, shorter, with very broad front tarsi, in the female.

In this genus an extreme degree of sexual disparity is attained and, with it, a remarkable asymmetry in the head of the female, which is dilated on the left side, apparently to provide a broad base for the left mandible, which is much larger than the other.

In correspondence with the dilatation of the head, the eyes become more or less dorsal in position in this sex and there is an apparent reduction in their size, which, relatively to that of the head, may be very small. The prothorax also becomes shorter and broader in correspondence with the enlarged head, so that the whole anterior part of the body is quite differently proportioned in the two sexes. The tarsi of the female, especially those of the front pair of legs, are greatly dilated. In the males the legs are much longer and the tarsi only moderately broad. The expansion of the head, which is not entirely confined to the females, results in the antennæ, which are inserted in front of the eyes, assuming, like the latter, a dorsal position. These organs are short, the joints composing the foot-stalk more or less elongate, but generally very fine and delicate, and the loosely-articulated club consisting of from three to five joints, but most frequently of four. The form of the posterior margins of the elytra also differs in each species. In *D. viator* and *D. oblonga* they are jointly rounded or indefinitely truncate. In *D. mouhoti* the truncature is defined by a very slight angle and this angle is more accentuated in other species, becoming a sharp spine in *D. splendida* and *D. quadricollis*. Owing to this diversity, as well as the dissimilarity between the sexes, the species have been referred to several genera, but I have been unable to find any satisfactory dividing lines. Several of the species were referred by Fowler to the genus *Callilanguria*, to which the males have a superficial resemblance, but that genus is distinguished by its cylindrical prothorax, completely devoid of lateral margins, and I know of no Indian representative of it.

Key to the Species of DOUBLEDAYA.

- | | |
|--|---------------------------------------|
| 1 (20) Elytra without a sharp outer apical angle. | |
| 2 (15) Apices of the elytra not produced nor fringed. | |
| 3 (6) Pronotum with a complete groove along the middle line. | |
| 4 (5) Legs very long; elytra strongly punctured | <i>viator</i> , White, p. 187. |
| 5 (4) Legs not very long; elytra less strongly punctured | <i>oblonga</i> , Fowl., p. 189. |
| 6 (3) Pronotum not completely grooved along the middle line. | |
| 7 (12) Not uniformly dark-coloured. | |
| 8 (11) Elytra dark. | |
| 9 (10) Elytra and abdomen black..... | <i>atripennis</i> , sp. n., p. 189. |
| 10 (9) Elytra blue; abdomen red..... | <i>severini</i> , Fowl., p. 190. |
| 11 (8) Red, with the extremities of the elytra black | <i>ustulata</i> , sp. n., p. 191. |
| 12 (7) Uniformly dark-coloured. | |
| 13 (14) Elytra finely punctured | <i>walkeri</i> , Fowl., p. 192. |
| 14 (13) Elytra strongly punctured | <i>cratricollis</i> , Gorch., p. 193. |

- 15 (2) Apices of the elytra produced and finely fringed.
- 16 (19) Club of the antenna 4-jointed; head red.
- 17 (18) Elytra moderately punctured.... *schenklingi*, Fowl., p. 194.
- 18 (17) Elytra very finely punctured.... *collina*, Fowl., p. 195.
- 19 (16) Club of the antenna 3-jointed; head dark *ruficollis*, Kr., p. 196.
- 20 (1) Elytra with a sharp outer apical angle.
- 21 (34) Elytra entirely dark.
- 22 (29) Head and prothorax red.
- 23 (26) Outer apical angle of the elytra produced into a strong spine.
- 24 (25) Elytra more finely punctured. .. *splendida*, Gorb., p. 197.
- 25 (24) Elytra strongly punctured *quadrifollis*, Fowl., p. 197.
- 26 (23) Outer apical angle of the elytra not produced into a strong spine.
- 27 (28) Punctures of the upper surface very close *andrewesi*, Fowl., p. 198.
- 28 (27) Punctures of the upper surface not very close *pulehella*, Fowl., p. 199.
- 29 (22) Head not red.
- 30 (31) Pronotum red *speciosa*, Gorb., p. 199.
- 31 (30) Entirely dark coppery brown.
- 32 (33) Antenna with 5-jointed club .. *dilatipes*, Gorb., p. 200.
- 33 (32) Antenna with 4-jointed club .. *forcipata*, sp. n., p. 201.
- 34 (21) Red, with the legs and tips of the elytra black *mouhoti*, Crotch, p. 202.

Languria nietneri, Har. (p. 203), which also belongs to this genus, is unknown to me, and is therefore not included in the key.

147. *Doubledaya viator*. (Figs. 31, 32, p. 165.)

Doubledaya viator, White,* Proc. Ent. Soc. Lond. 1850, p. 13; id., Trans. Ent. Soc. Lond. (2) ii, 1852, p. 2, figs. 1-5; Fowl.,

Wytzman's Gen. Insect., Languriinæ, 1908, pl. i, figs. 8 & 9.

Doubledaya whitei, Crotch,* Cist. Ent. i, 1876, p. 382.

Doubledaya varians, Fowl., Trans. Ent. Soc. Lond. 1886, p. 24; id., Wytzman's Gen. Insect., Languriinæ, 1908, p. 12 (part).

Doubledaya lewisi, Kraatz,* Deutsche Ent. Zeitschr. 1859, p. 208.

Bright brick-red, with the antennæ and legs partly or entirely black, and the sides of the metasternum and anterior ventral sternites decorated with large black patches. The prothorax is sometimes black and occasionally the whole body.

Elongate but not very narrow. The prothorax is strongly narrowed at the base, very convex, longitudinally sulcate in the middle, with irregular punctures in the sulcus, the basal margin sharply raised and the lateral foveæ deep and very oblique, the front angles bluntly rectangular and the hind ones acutely produced. The scutellum is transverse but acute at the apex. The elytra bear large deep punctures in close and regular rows, the sides are a little rounded behind and the apices subtruncate,

but not abruptly. The prosternum is transversely wrinkled in front of the coxæ, and the metasternum and abdomen are very sparsely punctured. The 2nd joint of the antenna is longer than the 1st and at least as long as the 3rd, and the last four joints are very loosely connected and about as long as they are broad.

♂. The head is long and symmetrical and the eyes not very small. The prothorax is as long as it is wide and strongly narrowed to both front and hind margins. The legs are very slender, especially the front ones, of which the femora are very finely serrate along the inner edge and the tibiæ very finely but less closely, and the tarsi are long and moderately wide. There is a transverse carina upon the mentum, which curves forward and downward at each end, forming a sharp angle.

♀. The head is very large, dilated in front and angularly produced on the left side, and the eyes are very small and entirely dorsal in position. The prothorax is strongly transverse and broad in front. The front and middle tarsi are extremely broad, especially the former.

Length, 12–25 mm.; breadth, 3–6 mm.

SIKKIM: Nurbong, Darjeeling (*H. Stevens*); Maria Basti (*L. Durel*). ASSAM: Chandkhira, Sylhet (*J. L. Sherwill*); Cherapunji. BURMA: Bhamo (*L. Fea*, Nov.); Ruby Mines (*W. Doherty*); Karen Hills, Cheba (*L. Fea*, Jan.). TENASSERIM: Thagata (*L. Fea*, April). ANDAMAN ISLANDS. NICOBAR ISLANDS. INDO-CHINA. SIAM.

Type in the British Museum, that of *whitei* in the Cambridge University Museum and that of *lewisi* in the Berlin Entomological Institute (co-type in the British Museum). The locality Sunatra, attributed by Crotch to his *D. whitei*, requires confirmation.

Fowler and Kraatz have incorrectly united the Japanese *D. bucculenta*, Lewis, with this species. Fowler confused two different species in his description of *Doubledaya varians*. His diagnosis is drawn from what he regarded as the female, the male being distinguished as having only three joints to the club of the antenna. The latter, now in the British Museum, is a small female of *D. ruficollis*, Kr. I have not been able to trace the specimen which Fowler regarded as his type, but he announced in 1908 that his name was certainly a synonym of *D. viator*. It must be supposed that the type has a four-jointed club and is a male of the present species.

White's figure of his type-specimen, although representing the female, does not show the very striking asymmetry of the head, nor is this mentioned in the description. It was no doubt attributed to accident or abnormality.

This species sometimes occurs in great abundance, but its habits have not yet been recorded.

148. *Doubledaya oblonga*.

Languria oblonga, Fowl,* Trans. Ent. Soc. Lond. 1886, p. 313.

Ctenolanguria oblonga, Fowl., Wytsman's Gen. Insect., Languriinae, 1908, p. 18.

Entirely black and shining, with a very thin clothing of minute golden setæ.

Moderately elongate, parallel-sided, with rather stout antennæ and legs, the former with joints 1 to 6 slightly longer than wide and the last four distinctly transverse, forming a rather compact narrow club. Head rather closely and deeply punctured, with moderately large eyes. Pronotum similarly punctured in the middle and very finely and scantily at the sides, with a complete but shallow median dorsal groove, a deep transverse basal impression, and rather long, deeply-impressed and divergent lateral foveæ. The scutellum is smooth, narrowed at the base and sharply pointed at the apex, and the elytra bear rows of closely and deeply-impressed punctures, with fine but distinct irregular punctures in the intervals; their sides are straight and nearly parallel and the apices squarely truncate, with the outer angles rounded and the sutural angles almost rectangular. The pronotum is transversely wrinkled, the episterna are strongly punctured, the metasternum is finely and not closely punctured and the abdomen densely.

♂. The genæ are angularly produced on each side and the eyes are rather large. The pronotum is as long as it is wide, with the sides strongly rounded, narrowed in front and behind, but with the front angles a little produced. The legs are not very slender, but the tarsi are long, the front femora are armed with unevenly spaced teeth along the inner edge, and the front tibiæ bear very minute and rather more closely-set teeth along the corresponding edge.

♀. The left side of the head is strongly and angularly produced outwards, the pronotum is transverse, broad in front and strongly contracted behind, the legs are fairly stout and the front and middle tarsi moderately broad.

Length, 15 mm.; *breadth*, 4 mm.

BURMA: Pyinmana, Vanaungmyin River. (C. F. C. Beeson, June).

Type in the British Museum.

The species was described from a single male specimen and its true affinities were unknown to the describer. A single female from the locality quoted above is the only other example known to me. The clothing of microscopic setæ is a very exceptional feature.

149. *Doubledaya atripennis*, sp. nov.

Black, with the head and prothorax bright vermilion red.

Long and slender, moderately shining, with the pronotum very smooth, unpunctured, longitudinally channelled in the posterior half, narrow at the base, with the lateral foveæ very strongly

divergent, but not long nor very deeply impressed. The elytra are strongly and deeply punctate-striate, broad at the shoulders, tapering strongly to the extremities, with the sides straight and the apices truncate. The eyes are very small, separated by an interval more than four times as wide as their radius. The antennæ are short, with an abrupt four-jointed club, of which all the joints are transverse. The lower surface is nearly smooth. The prosternal process is quadrate, with the posterior angles sharp and a little deflexed.

♂. Head small and nearly symmetrical, with the genæ angularly produced and rather more acute on the left side than on the right. Clypeus symmetrical, declivous on each side, forming an acute angle in the middle of the front margin. Pronotum longer than it is wide, extremely convex, narrower in front than at the base, with the lateral margins strongly and evenly rounded. Prosternum transversely wrinkled. Legs rather slender, the inner edges of the front femora armed with sharp, curved, backward-directed spines.

♀. Head very large, with the genæ produced outwards, but much more strongly on the left than on the right. Clypeus emarginate in front, with the right angle strongly produced. Pronotum half as broad again as it is long, with the lateral margins strongly rounded in front and the base narrower than the front margin. Prosternum almost smooth.

Length, 21 mm.; *breadth*, 5 mm.

BENGAL: Darjeeling (Oberthür Coll.). ASSAM: Khasi Hills, Cherrapunji.

Type in the British Museum.

This species closely resembles *D. severini*, Fowl., but the specimens are larger and the elytra are quite black (not blue). The lower surface is also black, except that of the prothorax, the middle of the metasternum and first abdominal segment.

The thoracic groove is much less strong than in *D. viator* and *D. bucculenta*, the sides of the elytra are straighter, the club of the antenna more compact, the legs less slender in the male and the front tarsi of the female less broad. The front tibiæ and tarsi of the male specimen are wanting, but the former are of course toothed in correspondence with the femora.

150. *Doubledaya severini*.

Doubledaya severini, Fowl.,* Ann. Soc. Ent. Belg. xxxvii, 1893, p. 74.

Bright orange-red, with the elytra steely blue and the eyes, antennæ, legs and extreme apex of the abdomen black.

Moderately long and slender, very shining, with the legs rather stout and the elytra straight-sided and tapering a little from shoulders to apex. The head is almost smooth, bearing only a few very minute and sparse punctures. The pronotum is also very smooth, with a few punctures in its median part, very convex,

strongly contracted at the base, where it is deeply transversely impressed, with strongly-impressed lateral foveæ and acute hind angles. The scutellum is smooth, transverse and acutely angled. The elytra are strongly punctured in close regular rows, with the shoulders rather prominent and the apices truncate, with the outer angles blunt. The antennæ are short, with the 2nd joint a little longer than the 1st, but barely as long as the 3rd, the last four joints transverse and rather broad.

♂. The clypeus is produced to a point in the middle. The prothorax is elongate and narrowed to the front and hind margins, with a short longitudinal impression in its posterior part. The front femur and tibia are armed with rows of short teeth, those of the femur rather sharp and those of the tibia few, irregular and feeble. The tarsi are very long.

♀. The head is strongly dilated from behind forwards, but more sharply, produced outwards on the left side, and the eyes are entirely dorsal in position. The prothorax is strongly transverse and broad at the front margin. The front tarsi are very broad.

Length, 15 mm.; *breadth*, 3.5 mm.

SIKKIM: Kurseong (*P. Braet*); Nurbong, Mahanuddy Valley (*H. Stevens*); Maria Basti (*Léon Durel*, Oberthür Coll.).

Type in the Brussels Museum.

Although described as a male in the original description, the type is really a female. Mr. Stevens has taken a single male specimen, which he has presented to the British Museum.

151. *Doubledaya ustulata*, sp. nov.

Bright brick-red, smooth and shining, with the eyes, antennæ and legs black and the extreme apices of the elytra (and sometimes the tarsi) blue-black.

Long and slender, with the head and pronotum very feebly and scantily punctured, the latter without a complete median groove, narrow at the base, with the lateral foveæ well marked and very strongly divergent. The elytra are strongly and deeply punctate-striate, broad at the shoulders, tapering strongly to the extremities, with the sides straight and the apices truncate. The eyes are very small, separated by an interval four times as wide as their radius. The antennæ are short, with an abrupt 4-jointed club, of which all the joints are transverse. The lower surface is very scantily punctured. The prosternal process is quadrate, with the posterior angles a little produced and deflexed.

♂. Head small and nearly symmetrical, with the genæ angularly produced and a little more acute on the left side than the right. Clypeus symmetrical, declivous on each side, forming a sharp angle in the middle of the front margin. Pronotum as long as it is wide, very convex, with a broad median depression at the base and the lateral margins strongly rounded. Prosternum long, transversely wrinkled in front, the intercoxal process narrow. Legs slender, the front pair especially, of which the femora and

tibiæ are armed with sharp spines, directed forwards upon the tibiæ and backwards upon the femora.

♀. Head very large, with the genæ produced outwards, but much more strongly on the left than on the right side. Clypeus emarginate in front, with the right angle sharply produced. Pronotum half as broad again as it is long, much wider in front than at the base, with only a vestige of a median groove in the posterior part, the lateral margins strongly bisinuate. Prosternum short, almost smooth in front, the intercoxal process quadrate. Front tarsi extremely broad.

Length, 10–21 mm.; *breadth*, 2·5–5 mm.

BENGAL: Keng Trap (June). SIKKIM: Nurbong, Darjeeling, 3500 ft. (*H. Stevens*, Dec.); Mungphu (*E. T. Atkinson*); Maria Basti (*L. Durel*). ASSAM: Naga Hills (*W. Doherty*). BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.). LAOS: Luang Prabang; Ban Pan; Vien Poukha (May).

Type in the British Museum.

The coloration of this species is the same as that of *D. mouhoti*, which small specimens greatly resemble. They may be readily distinguished by the rounded outer apical angles of the elytra.

152. *Doubledaya walkeri*.

Languria walkeri, Fowl,* Trans. Ent. Soc. Lond. 1886, p. 313.

Cenolanguria walkeri, Fowl., Wytzman's Gen. Insect., Languriinæ, 1908, p. 18.

Chocolate-brown, without metallic lustre, with the antennæ and the tips of the elytra black.

Moderately elongate, smooth and shining, with fairly stout legs and short, not very slender, antennæ, of which the first six joints are slightly longer than broad and the last four distinctly transverse, forming a rather compact club. The head is finely and lightly, but rather evenly, punctured, the pronotum a little more strongly in the middle and very feebly at the sides, without a median groove, but with a deep transverse basal impression and well-marked, slightly divergent, lateral foveæ. The scutellum is smooth and rather sharply angular at the apex, and the elytra bear regular rows of minute longitudinal punctures. The shoulders are rather sharply angular, the sides nearly parallel to beyond the middle and from there slightly convergent, and the apices are truncate, with the outer angles rounded and the sutural angles obtuse. The metasternum bears a few fine punctures at the sides.

♀. The head is broad, with the eyes not very small and the left cheek strongly and angularly produced outwards. The prothorax is a little wider than it is long, widest at the front margin, the front angles bluntly rectangular, the sides strongly contracted from the middle to the base. The tarsi are very broad.

Male unknown.

Length, 11 mm.; *breadth*, 2·5 mm.

CEYLON (*Thwaites*).

Type in the British Museum.

The type is a damaged female specimen, apparently of poor development. The puncturation is very light and fine.

153. **Doubledaya cribricollis.**

Callilanguria cribricollis, Gorh., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 260.

Dark chocolate-brown, with the antennæ black.

Moderately long and slender, with the antennæ and legs rather stout and the sides of the elytra straight and slightly convergent

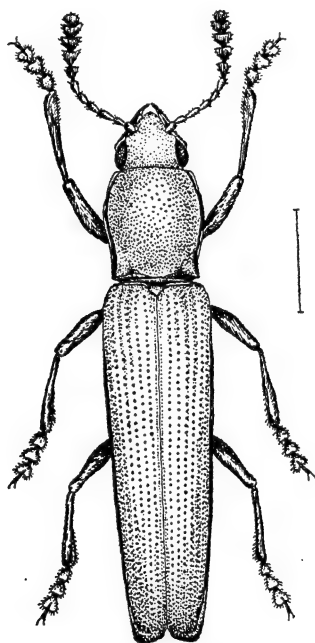


Fig. 37.—*Doubledaya cribricollis*, male.

from shoulders to extremities. The eyes are rather large, separated by less than four times their radius. The head and pronotum are fairly strongly punctured, the latter not very convex, the base margined, smooth and a little depressed in the middle, with the lateral foveæ very deep. The elytra are strongly and uniformly striate-punctate, with the sides straight and the extremities a little produced, flattened and obliquely truncate, the sutural angles a little diverging, sharp but not prominent, and the outer angles rounded. The prosternum is deeply wrinkled transversely, the metasternum is very smooth, with a few large scattered punctures at the sides, the abdomen strongly punctured

at the sides and very finely in the middle. The first five joints of the antenna are elongate, the 6th slightly dilated, the 7th as wide as it is long and the last four transverse, the 11th rather small.

♂. The pronotum is elongate, with its sides strongly bisinuate, and narrowed in front and behind. The legs are a little more slender than those of the female, and especially the front femora, which have each about six minute but sharp teeth placed at intervals along the inner edge. The tarsi are also longer and broader than those of the female.

♀. The pronotum is not distinctly longer than broad, and its sides are nearly straight, converging a little behind, but not perceptibly in front.

Length, 11–14 mm.; *breadth*, 2.5–3 mm.

BURMA: Karen Hills, Cheba, 2900–4200 ft. (*L. Fea*, Dec.).

Type, male in the Genoa Museum; female in the British Museum.

In the female specimen in the British Museum there is practically no asymmetry, although the head is very slightly more produced on the left side. It is possible that larger specimens occur in which the sexual characteristics are more pronounced than in those at present known.

154. *Doubledaya schenklingi*.

Callilanguria schenklingi, Fowl,* Wytsman's Gen. Insect., Languriinæ, 1908, p. 21, pl. ii, fig. 9.

Blood-red, with the elytra bright metallic green or greenish-blue and the antennæ, legs, metasternum and abdomen black, with dark green, blue, and purple reflections.

Very long and slender, with the greatest width at the prothorax and the elytra tapering from the shoulders to just before the extremities. The head and pronotum are distinctly but not closely punctured, the eyes small and prominent; the pronotum contracted at the base, with a strong basal groove and well-marked divergent lateral foveæ; the scutellum sharply pointed at the apex. The elytra are moderately striate-punctate, with very prominent shoulders and the sides straight and converging to the extremities, where they very slightly diverge; their apices are truncated and finely scalloped, the inner angles sharp, the outer angles blunt and fringed with hair and the suture gaping a little at the extremity. The lower surface is extremely smooth and shining, with deep scattered punctures at the sides, and the intercoxal process of the first ventral segment is acute. The antennæ are short, joints 2 to 7 elongate, 8 to 11 transverse and fairly closely articulated.

♂. The head is symmetrical and the clypeus moderately long. The pronotum is distinctly longer than it is wide and very convex, with the lateral margins strongly rounded and the widest part near the middle. The legs are very long and slender, the front

ones longer than the rest, the front femora minutely toothed along the lower edge, and the front tarsi very long.

♀. The head is angularly produced on the left side, and the clypeus is short. The pronotum is broader than it is long, with its broadest part just behind the front margin, the sides strongly converging from there to the base. The legs are not very long, but the tarsi are very broadly dilated, the front ones most, and the hind ones least so.

Length, 11–19 mm.; *breadth*, 2·5–5 mm.

S. INDIA : Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

The gibbosity of the thorax of the male varies according to the size of the specimen. In large individuals it is very greatly swollen.

155. *Doubledaya collina*.

Callilanguria collina, Fowl,* Wytzman's Gen. Insect., Languriinæ, 1908, p. 21.

Blood-red, with the elytra deep metallic green or greenish-blue and the antennæ (except at the base, where they are red), legs, metasternum and abdomen black.

Moderately long and slender, with the elytra tapering from a little behind the shoulders to just before the extremities. The head and pronotum are very finely and sparsely punctured, the pronotum contracted at the base, with a basal groove and short divergent lateral foveæ, and the scutellum obtusely pointed. The elytra are very finely striate-punctate, the punctures almost vanishing towards the apical part; the shoulders are somewhat, and the sides of the elytra very gently, rounded, the latter converging from behind the shoulders to near the extremities, where they slightly diverge, gaping a little at the end of the suture; the apices are truncate, the inner angles rather sharp and the outer angles rounded and fringed with hairs. The lower surface is extremely smooth and shining, the prosternal process quadrate, the metasternum scarcely punctured, the first ventral segment strongly punctured and its intercoxal process acute. The antennæ are short, joints 1 to 7 elongate, 8 an equilateral triangle, 9 and 10 strongly transverse and the last almost round.

♂. The head is symmetrical and the clypeus moderately long. The pronotum is about as long as it is wide, strongly convex, with the lateral margins well rounded, and the widest part in the middle. The front legs are slender and the femur is minutely denticulate along its lower edge.

♀. The head is angularly produced on the left side and the clypeus is very short. The pronotum is broader than it is long, with its broadest part just behind the front margin, the sides strongly converging from there to the base. The legs are not long, but the front tarsi are very broadly dilated.

Length, 6·5–13 mm.; *breadth*, 2–3·5 mm.

S. INDIA : Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

This is rather shorter and more finely punctured than *D. schenkingi* and the elytra are less brightly coloured.

156. *Doubledaya ruficollis*.

Cosmolanguria ruficollis, Kr.,* Deutsche Ent. Zeitschr. 1899, p. 351;

Fowl., Wytsman's Gen. Insect., Languriinæ, 1908, pl. i, fig. 10.

Doubledaya varians, Fowl., Trans. Ent. Soc. Lond. 1886, p. 24;

id., Wytsman's Gen. Insect., Languriinæ, 1908, p. 12 (part).

Cosmolanguria kraatzi, Fowl.,* l. c. p. 13, note (new syn.).

Deep metallic blackish-green and very shining, usually with the mandibles, the anterior part of the head, the pronotum, the sides of the body beneath and the abdomen partly or entirely dark red, the whole suffused with a greenish metallic lustre.

Moderately elongate, with very slender legs and extremely short and slender antennæ, the sides of the elytra straight and strongly convergent from the shoulders to the apices, which are a little produced and bluntly prominent at the outer angles. The head and pronotum are very smooth and almost devoid of punctures, the latter strongly contracted behind, with a shallow longitudinal median groove, a very narrow basal margin, deeply impressed basal foveæ, and acute hind angles. The scutellum is flat, smooth, rather transverse and obtusely pointed behind. The elytra bear closely-set rows of coarse deep punctures. The body is very smooth beneath, but the sides of the abdomen are rather closely punctured. The eyes are very small and entirely dorsal and the antennæ are extremely slender but short, the first eight joints very elongate and the last three forming a small compact club.

♂. The head is symmetrical, the prothorax longer than wide, contracted in front and behind, and the legs extremely slender.

♀. The head is very broad and asymmetrical, the prothorax relatively small, transverse and broad in front, the front and middle tarsi very broad.

Length, 14–22 mm.; *breadth*, 3–5 mm.

DARJEELING: Nurbong (*H. Stevens*). ASSAM: Khasi Hills; Naga Hills (*W. Doherty*); Dafia Hills (*E. T. Atkinson*). ABOR COUNTRY: Upper Rotung (*S. Kemp*, Jan.). INDO-CHINA.

Type in the Berlin Entomological Institute; that of *kraatzi* in the British Museum.

The type of *Cosmolanguria kraatzi*, Fowler, is a large female and that of *C. ruficollis*, Kr. (kindly lent me by Dr. W. Horn of the Berlin Entomological Institute), a small male, the latter the only example of that sex I have seen. These specimens are so strikingly dissimilar that I have only associated them as belonging to a single species with considerable hesitation. I can find no possibly specific difference between them however, unless it's in a very slight dilatation of the extremities of the elytra in the female. The immature specimen which Fowler described as a male (it is

really a female) of *D. varians*, distinguishing it from the form he regarded as typical by the possession of a three-jointed antennal club, belongs to this species.

157. *Doubledaya splendida*.

Coptolanguria splendida, Gorh.,* Ann. Soc. Ent. Belg. xlvii, 1908, p. 341; Fowl., Wytzman's Gen. Insect., Languriinæ, 1908, pl. i, fig. 11.

Black, with a slight greenish or bluish lustre, and with the head and prothorax bright red and the elytra coppery or bright metallic green. The basal joints of the antennæ are dark red and the remainder, like the legs, are black.

Rather long and slender, with the elytra tapering from the shoulders to the extremities. The eyes are very small and separated by a distance four times as wide as their radius. The head and pronotum are extremely smooth and shining, with hardly perceptible punctures. The pronotum is rather convex, its sides are gently rounded, a little convergent in front but scarcely behind, the base is strongly sulcate, the lateral foveæ are very short and the hind angles rather acute. The scutellum is very smooth, broad and almost right-angled at the apex. The elytra are finely but strongly and closely striate-punctate, the punctures gradually diminishing behind and disappearing before the apex; the sides are straight and each elytron is furnished with a strong spine at the outer apical angle, the apices diverging and the sutural angles being represented only by very minute but sharp internal teeth. The prosternum is transversely wrinkled, the metasternum very smooth, the abdomen very minutely and sparsely punctured, the basal segment with an acute intercoxal process and rather feeble coxal lines. The antennæ are slender, joints 1 to 8 elongate, but 7 and 8 triangular, 9 and 10 strongly transverse and the last nearly round.

♂. The head is nearly symmetrical. The pronotum is nearly one and a half times as long as it is wide. The legs are slender, the front ones more so than the rest, the front femora bear fine teeth at irregular intervals along the inner edge and the front tibiæ have still more minute and less numerous teeth.

♀. The head is angularly produced on the left side. The pronotum is about as broad as it is long. The legs are not very long, but the tarsi, and especially the front ones, are very broadly dilated.

Length, 10–14 mm.; *breadth*, 2.5–3 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

158. *Doubledaya quadricollis*. (Pl. I, fig. 10, ♀.)

Coptolanguria quadricollis, Fowl.,* Wytzman's Gen. Insect., Languriinæ, 1908, p. 14.

Black or æneous, with the head and prothorax and the foot-

stalk of the antenna blood-red and the elytra bright metallic blue-green.

Rather long and slender, with the sides of the elytra straight and convergent from shoulders to extremities. The head and pronotum are very sparsely punctured and the eyes are rather small and divided by a distance equal to about three times their radius. The sides and base of the pronotum are strongly margined and the lateral foveæ are strongly divergent. The scutellum is slightly transverse. The elytra are very strongly and deeply punctate-striate, the punctures disappearing a little before the apices, of which the inner angles are minutely, and the outer strongly, spinose. The lower surface is extremely smooth, with scarcely perceptible punctures in the middle and a few large ones at the sides, the first sternite with very short parallel coxal lines. The antennæ are slender, joints 1 to 7 elongate and subequal, 8 a little produced internally, 9 and 10 transverse and the last as long as it is wide.

♀. The head is angularly produced on the left side, the pronotum is transverse, with its sides straight and parallel, the front angles obsolete and the hind angles acutely produced. The legs are slender and the tarsi (especially the front ones) broad.

Only one specimen (a female) is known.

Length, 13 mm.; *breadth*, 3 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

159. *Doubledaya andrewesi*.

Glyphilanguria andrewesi, Fowl,* Wytzman's Gen. Insect.,
Languriinæ, 1908, p. 15.

Bright red and shining, with the elytra dark metallic green and the tarsi and the club of the antenna (except the extreme apex) black.

Moderately slender, with the elytra tapering from the shoulders to the extremities. The head and pronotum are finely and unequally punctured, and the eyes are very small, separated by a distance four times their radius. The pronotum is strongly margined at the sides and base and the basal foveæ are well-developed and rather long. The scutellum is transverse but rather sharply angulated behind. The elytra are strongly and closely striate-punctate, the punctures disappearing a little before the extremity; their sides are gently curved from the shoulders to about the middle and straight and convergent from there to the apices, which are slightly divergent and obliquely truncate, both the inner and outer angles being acute but not produced. The lower surface is very smooth but there are a few large punctures upon the prothoracic episterna and a few at the sides of the metasternum and abdominal sternites. The antennæ are very slender, all but the last two joints elongate, the club loose and three-jointed.

♀. The head is angularly produced on the left side. The pronotum is transverse and a little broader in front than behind, with the front angles very blunt. The legs are slender and the tarsi, especially the front ones, broad.

The male is unknown.

Length, 11–12 mm.; *breadth*, 2·5–3 mm.

S. INDIA; Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

160. *Doubledaya pulchella*.

Callilanguria pulchella, Fowl,* Wytzman's Gen. Insect., *Languiriinæ*, 1908, p. 21.

Bright red, with the elytra deep blue-green, the antennæ, metasternum and abdomen black, and the legs reddish.

Moderately long and slender, with the greatest width at the prothorax and the elytra tapering from the shoulders to the extremities. The head and pronotum are rather finely, sparingly, but unevenly punctured, the latter with a sharply incised basal groove, the lateral foveæ very short and nearly parallel. The scutellum is smooth and obtusely angulated. The elytra bear rows of very large and deep punctures, which become finer towards the extremity and finally disappear; the shoulders are rounded and not prominent and the sides are almost straight; the apical margins are transversely truncated and the inner and outer angles are sharply spinose and almost equal, the outer not produced. The lower surface is very smooth and shining, the prosternum bears a few rather large punctures and the metasternum and abdomen are finely and extremely sparsely punctured. The antennæ are short, joints 1 to 6 elongate, 7 and 8 triangular, but not large, 9 and 10 strongly transverse and 11 nearly round.

The male is unknown.

Length, 7·5 mm.; *breadth*, 2 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

Only a single slightly immature female specimen is known. It is very likely that the species attains a larger size than is indicated by this example.

161. *Doubledaya speciosa*.

Coptolanguria speciosa, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 263.

Bluish- or greenish-black, with the pronotum and prothoracic episterna blood-red.

Long and slender, with the elytra tapering from the shoulders to the extremities. The eyes are not very small and are separated by rather more than three times their radius. The head and pronotum are finely and sparingly punctured, the pronotum broader than the elytra, rounded at the sides, slightly and almost

equally contracted in front and behind, with the hind angles acutely produced, the base narrowly margined and the lateral foveæ short and divergent. The scutellum is acutely pointed and slightly impressed on each side. The elytra bear strongly-impressed rows of close, large and deep punctures; the shoulders are rounded, the sides almost straight and strongly convergent to the extremities, which are truncate and feebly serrate, the inner angle acute but not produced, and the outer angle produced into a sharp spine. The lower surface of the body is extremely smooth and shining and almost devoid of punctures, except at the sides of the prothorax, the middle of the metasternum and the apex of the abdomen. The prosternal process is longitudinally wrinkled and truncate and the basal segment of the abdomen has an acute intercoxal process and two parallel incised coxal lines. The antennæ are short, joints 1 to 7 elongate, 8, 9 and 10 transverse and 11 almost round.

♂. The head is symmetrical and the clypeus very short. The pronotum is about as long as it is wide, moderately convex and widest in the middle, with the sides strongly rounded. The legs are very slender, the front femur closely and minutely denticulate along its lower edge, and the tibia bears corresponding denticulations placed about twice the distance apart along its inner edge.

The female is unknown.

Length, 14·5–15 mm.; *breadth*, 3·5 mm.

BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum; co-type in the British Museum.

162. *Doubledaya dilatipes*.

Coptolanguria dilatipes, Gorb.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 262.

Golden-brown or dark olivaceous metallic green, with the lower surface reddish-brown, lightly suffused with metallic green.

Long and slender, with the elytra tapering from the shoulders to the extremities. The eyes are fairly small and separated by nearly four times their radius. The head is extremely smooth and shining, very minutely and scantily punctured, but with the punctures larger in the middle. The pronotum is strongly punctured, except at the sides, where the punctures become very fine and scanty; its base is rather deeply impressed in the middle, the lateral foveæ are divergent and the hind angles are right angles. The scutellum is very smooth, a little depressed and obtusely angulated at the apex. The elytra are strongly and closely striate-punctate, the shoulders are rather prominent and the sides straight and convergent from there to the extremities, which are truncate, the inner angle a right angle and the outer one produced into an acute spine. The lower surface is very smooth and shining, with the sides of the prothorax coarsely punctured, the metasternum extremely finely and scantily, the abdomen very finely and sparingly, except at the sides. The

basal abdominal sternite has a narrow but blunt intercoxal process and two parallel coxal lines. The antennæ are short, joints 1 to 6 elongate, the club five-jointed, joint 7 being triangular and as broad as it is long, 8, 9 and 10 transverse and the last nearly round.

♂. The head is symmetrical and the clypeus short. The pronotum is slightly convex, a little longer than it is wide, with the sides rounded and a little contracted in front and very feebly at the base, with the hind angles not produced nor acute. The legs are very long and slender, especially the front ones, of which the femora and tibiæ bear rows of minute teeth, not very close together, at their inner edges.

♀. The pronotum is transverse and not very convex, its sides are scarcely convergent anteriorly but feebly behind and its hind angles are acute. The legs are very slender, but less elongate than in the male, and the tarsi of the two anterior pairs are extremely broad.

Length, 15 mm.; *breadth*, 4 mm.

BURMA: Karen Hills, Cheba, 2900–3500 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum; co-type in the British Museum.

163. *Doubledaya forcipata*, sp. nov.

Brown, with a coppery or brassy-green lustre.

Moderately elongate, with the elytra tapering strongly from the shoulders to the tips. The head and pronotum are rather finely and sparingly punctured, the eyes not very small nor very prominent, the pronotum subquadrate, with the sides scarcely rounded or contracted at the base, and the lateral foveæ short but deep. The scutellum is smooth and slightly transverse. The elytra bear regular rows of rather fine punctures and the intervals contain extremely fine punctures; their sides are straight from shoulders to apices and the latter are obliquely emarginate, with the inner and outer angles spinose and the latter produced. The prosternum is transversely wrinkled, the metasternum bears only a few very minute punctures and the abdomen is coarsely punctured at the sides and more finely in the middle, its basal sternite having a pair of parallel longitudinal carinæ about half the length of the segment. The antennæ are short, the first seven joints elongate and the club 4-jointed, broad and compact, its basal joint small and triangular.

♂. The pronotum is about as long as it is wide, the legs are very slender, especially the front pair, of which the femora and tibiæ are armed with minute, irregular teeth at the inner edge.

♀. The head is a little asymmetrical, the clypeus strongly produced on the right side, the pronotum slightly transverse and the legs shorter.

Length, 12–13 mm.; *breadth*, 3 mm.

ASSAM: N. Manipur (*W. Doherty*). SIKKIM: Darjeeling.

Type in the British Museum.

The only female I have seen is a very imperfect one from the Bowring Collection. This and an equally imperfect male were taken in Darjeeling.

The broad 4-jointed antennal club is a well-marked distinctive feature of this insect, which has the coloration of *D. dilatipes*, but the puncturation is finer and the extremities of the elytra are more produced. In form and sculpture it nearly resembles *D. splendida*.

164. *Doubledaya mouhoti*.

Languriosoma mouhoti, Crotch,* Cist. Ent. i, 1876, p. 379.

Languria mouhoti, Har., Mitth. Münch. Ent. Ver. iii, 1879, p. 92.

Bright brick-red, with the extreme apices of the elytra, the metasternum and abdomen, the legs (except the trochanters) and the antennæ, except at the base, black.

Not very elongate, shining, with the prothorax a little wider than the elytra, the latter with prominent shoulders, the sides rather straight and strongly convergent from the shoulders to the extremities, which are narrow and truncate. The head and pronotum are moderately punctured, the latter almost smooth at the sides, which are rather strongly rounded and broadly margined, the basal foveæ are rather long, deeply incised and divergent and the base is deeply impressed between them. The scutellum is pentagonal, with the apical angle rather sharp. The elytra are strongly margined at the base and bear regular rows of large and deep punctures, which are generally stained more or less black; the inner and outer apical angles are sharp, but not distinctly produced. The prosternum is transversely wrinkled and the episterna bear a few large punctures. The metasternum is almost unpunctured and the abdomen is well punctured beneath, the basal segment bearing a pair of nearly parallel carinæ, extending to about three-quarters of the length of the segment. The antennæ are short and slender, the first six joints being elongate, the 7th not quite as wide as it is long, the 8th a little wider, the 9th and 10th strongly transverse and the 11th nearly circular.

♂. The pronotum is very convex, not transverse, its sides strongly contracted in front and behind. The legs, and especially the front pair, are long and slender, the front femora armed with sharp spines along the inner edge, and the tibiæ with finer and more closely-set tubercles.

♀. The head is broader and a little more dilated on the left side than the right. The prothorax is transverse and broad at the front margin. The front tarsi are broadly lobed.

Length, 6.5–13 mm.; breadth, 2–4 mm.

SIKKIM: Maria Basti (*L. Durel*); Pedong (*A. Desgodins*); Gopaldhara, Rungbong Valley (*H. Stevens*, June). BURMA: Ruby Mines, Momeit (*W. Doherty*); Bhamo (*L. Fea*, Aug.); Teinzo (*L. Fea*, May). TENASSERIM: Tavoy (*W. Doherty*);

Victoria Point (*E. T. Atkinson*). INDO-CHINA. MALAY PENINSULA: Penang. BORNEO.

Type in the Cambridge Museum of Zoology.

165. *Doubledaya nietneri*.

Languria nietneri, Har., Mitth. Münch. Ent. Ver. iii, 1879. p. 76.

"Head and thorax red, with the disc of the latter punctured, the elytra blue, strongly punctate-striate, the apex of each emarginate-truncate, the legs blue-black, the antennæ with the 7th joint elongate-triangular and the tarsi of the four anterior legs very broad.

Length, 12 mm.

CEYLON: (*Nietner*)."

I do not know this species, of which the original description is therefore given in translation.

Genus **LANGURIOPHASMA**, nov.

TYPE, *Languria cyanea*, Hope.

Range. India.

Narrowly elongate, with slender, but not very long legs and antennæ, the latter with the club loose and 3- or 4-jointed. Head without stridulatory ridges. Eyes finely-facetted, very prominent but not large. Prothorax rather long, strongly contracted behind, with the posterior angles slightly acute and the basal foveæ absent or not well-developed. Elytra with the shoulders prominent, the sides contracting from base to apex, the epipleuræ sharply defined and the apices separately rounded. Prosternum truncate behind, rather narrow. Mesosternum very long and narrow, not notched but truncate behind. Basal sternite of the abdomen with a narrow intercoxal process and without coxal lines. Mandible fairly stout. Maxilla with the inner lobe short, minutely toothed at the apex, with a sharp lower tooth at a little distance from the apex. Ligula with strong lateral lobes.

In this genus the apices of the elytra are separately rounded, as in *Cœnolanguria*, but the eyes are finely facetted. The thoracic foveæ are wanting or imperfectly developed. There is an approach to the American genus *Languria*, but the posterior narrowing of the prothorax and the consequent prominence of the shoulders of the elytra produce a quite distinctive appearance.

Key to the Species of LANGURIOPHASMA.

- 1 (4) Very shining: elytra coarsely punctured.
- 2 (3) Entirely blue or green *cyanea*, Hope, p. 204.
- 3 (2) Prothorax bright red *læta*, sp. n., p. 204.

- 4 (1) Not very shining: elytra finely
punctured
5 (6) Club of the antenna 3-jointed *constricta*, Gorh., p. 205.
6 (5) Club of the antenna 4-jointed *discoidalis*, Fowl., p. 205.

166. *Languriophasma cyanea*.

Languria cyanea, Hope,* Trans. Zool. Soc. Lond. i, 1835, p. 94,
pl. 13, fig. 4; Motsch., Schrenck's Reisen im Amurlande, ii,
1860, p. 243.

Deep shining blue, green or brassy-green, with the lower surface, legs and antennæ black.

Very long and narrow, with slender legs and antennæ, the latter having the first seven joints long, the 8th a little dilated, and the last three forming a long loosely-jointed club, the 9th triangular, the 10th transverse and the 11th as long as it is wide. The head is deeply and rather coarsely punctured, with the eyes small and very prominent and the antennæ placed rather far apart. The pronotum is long and narrow, rather finely and sparsely punctured, with the sides strongly bisinuate, rounded in front and contracted behind, the base transversely impressed and very narrowly margined and the basal foveæ not well-marked. The elytra are very strongly and deeply punctured in regular rows and taper from the shoulders, which are very prominent, to the extremities. The prosternum is finely transversely rugulose and the metasternum and abdomen are moderately closely punctured, the punctures becoming larger towards the sides.

Length, 7-8.5 mm.; *breadth*, 2 mm.

UNITED PROVINCES: Almora, Dhauli Ganga Valley, 9520 ft. (*R. N. Parker*, July); Mussoorie, 7000 ft. (*Pusa Coll.*, Aug.).

Type in the Oxford University Museum.

I have seen numerous specimens, all of them dark blue in colour except those taken at Dhauli Ganga, which are deep metallic green or golden green. These specimens were found feeding upon a species of *Impatiens*.

167. *Languriophasma læta*, sp. nov.

Black or brownish-black, with the prothorax bright red above and beneath and the elytra shining dark blue.

Very shining, long and slender, with the legs and antennæ fairly long, the latter with joints 2 to 7 elongate, 3 distinctly longer than the rest, 7 slightly dilated at the end, 8 triangular but barely as wide as it is long, and 9 to 11 transverse, the last four forming a fairly broad club. The head is finely and fairly closely punctured, the pronotum similarly but rather less closely, a little longer than it is wide, with the sides strongly rounded in front and contracted behind, the hind angles rectangular, the base moderately impressed and punctured and the lateral foveæ obsolete. The elytra are very strongly punctured in regular rows, with the shoulders very prominent,

the sides nearly straight and feebly converging from the shoulders to the extremities, which are separately but not strongly rounded. The prosternum, the sides of the metasternum and the abdomen are rather strongly punctured.

Length, 8-9 mm.; *breadth*, 2.5 mm.

INDIA.

Type in the British Museum; co-types in the Cambridge University Museum and the Oxford University Museum.

The type-specimen was bought from Deyrolle with other Indian beetles by the late Alexander Fry, but bears no exact locality-name. The specimen in the Crotch Collection (Cambridge) is labelled "India," and that in the Hope Department of the Oxford Museum is from Captain Boys' collection and probably taken by him in North-Western India.

168. *Languriophasma constricta*.

Cænolanguria constricta, Gorh.,* *Ann. Mus. Civ. Genova*, xxxvi, 1896, p. 266.

Black, with the prothorax bright red, except a narrow black marginal band anteriorly and a rather broader marginal band posteriorly.

Long and slender, with slender legs, the antennæ having the first seven joints elongate, the 3rd distinctly longer than the rest, the 8th triangular but a little longer than it is wide, the last three forming a rather loosely-jointed club, 9 and 10 strongly transverse and 11 elongate-oval. The head is moderately finely and not closely punctured, with the eyes prominent and rather large. The pronotum is very finely and sparsely punctured, elongate, very convex, with the sides strongly rounded in front and contracted behind, the base narrow, the foveæ wanting and the posterior angles acutely produced. The scutellum is transversely pentagonal, its sides a little contracted at the base and its apex rather sharp. The elytra are subopaque, very long and narrow, regularly and rather finely striate-punctate, with the shoulders prominent, the sides straight and gradually approximating from shoulders to apices.

Length, 8.5 mm.; *breadth*, 2 mm.

BURMA: Karen Hills, Cheba, 2700-3300 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum.

Only a single example of the species is known.

169. *Languriophasma discoidalis*.

Cænolanguria discoidalis, Fowl.,* *Wytzman's Gen. Insect., Languriinæ*, 1908, p. 17.

Black, with the prothorax bright red and decorated above with an elongate oval median black patch, extending to the front, but not to the hind, margin and sometimes also a narrow basal black border, not reaching the sides, and the elytra deep blue.

Long and narrow, moderately smooth and shining, with slender legs and antennæ, the first seven joints of the latter elongate, the 3rd twice as long as the 2nd, and the last four forming a rather loosely-articulated club, the 8th as wide as it is long and the 9th and 10th strongly transverse, the 11th almost circular. The head is finely but not sparsely punctured, with the eyes moderately large and prominent. The pronotum is very minutely and sparingly punctured, except in the middle and at the base, a little longer than it is broad, very convex, with the sides strongly rounded in front and contracted behind, the base finely

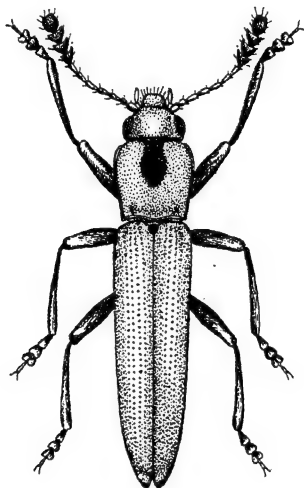


Fig. 38.—*Languriophasma discoidalis*.

margined and the basal foveæ obsolete. The scutellum is not transverse, its sides are rounded and its apex blunt. The elytra are rather finely and closely striate-punctate, with the sides tapering from shoulders to apices. The lower surface is very smooth and shining, the metasternum minutely and sparsely punctured in the middle and rather strongly at the sides.

Length, 8.5 mm.; *breadth*, 2 mm.

SOUTH INDIA: Nilgiri Hills (*H. L. Andrewes*); Chikkangalur, near Bangalore (*Tabourel*, Sept.); Wynad (*P. S. Nathan*, Nov.).

Type in the British Museum.

Genus **ANADASTUS**.

Anadastus, Gorb., Proc. Zool. Soc. Lond. 1887, p. 362; id., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 270; Fowler, Wytzman's Gen. Insect., Languriinæ, 1908, p. 30.
Neolanguria, Gorb., Proc. Zool. Soc. Lond. 1887, p. 361; Fowl., *op. cit.* p. 11. (Type, *Trogosita filiformis*, F.) (new syn.)

Stenodastus, Gorh., Proc. Zool. Soc. Lond. 1887, p. 362; Fowl., *op. cit.* p. 32. (Type, *Languria melanosterna*, Har.) (new syn.)

TYPE, *Languria cambodice*, Crotch.

Range. Africa and Asia.

Moderately elongate, rather parallel-sided; with the antennæ and legs not very slender. Eyes very finely faceted, moderately or not very prominent. Clypeus truncate at the front margin, except in *A. scutellatus*, Crotch, where it is rather minutely bidentate. Mandible with a blunt internal tooth behind the sharp apical one. Inner lobe of the maxilla armed with a minute sharp tooth at the tip. Mentum transverse; labial palpi short, with an almost globular last joint. Antennæ rather stout, with the 1st joint globular, the 2nd and succeeding joints elongate and the last three, four or five forming a club, sometimes narrow and loosely articulated, sometimes fairly broad and compact. Occipital region with a broad stridulatory patch. Pronotum more or less quadrate, with a basal margin and well-marked lateral foveæ. Base of the elytra with a marginal carina, shoulders well marked and a little tumid, apices generally truncate, always angular at the suture, never separately rounded. Prosternal process truncate behind. Mesosternum bifid between the middle coxæ. Basal sternite of the abdomen with a pair of elevated lines extending from the tip of the process, generally rather close together and scarcely diverging, but sometimes very short or absent. Tarsi varying in breadth, with the claws generally simple, but sometimes dilated at the base, the dilatation sometimes (e. g. *A. dohertyi* and *A. amabilis*) sharply angular. In *A. ochreipennis* the claw-joint is enlarged.

The sexes are generally alike, but *A. attenuatus* is an exception. In this the male has longer legs and antennæ, and the latter have the 7th joint produced.

The genus *Stenodastus* was established by Gorham in 1887, together with *Anadastus*, *Languria melanosterna*, Har., being made the type of the former and *L. cambodia*, Crotch, of the latter, and the diagnoses being, for the former "lineis abdominalibus impressis divaricatis" and for the latter "lineis abdominalibus cariniformibus." No further description was given and no other species were enumerated until, in 1896, having found that the supposed distinction between impressed and elevated lines had no value, Gorham remodelled the genus *Stenodastus*, withdrawing its only species (*melanosternus*), which he now considered congeneric with *Anadastus cambodice* (for the word "not" is evidently an interloper) and substituting two species previously unknown (*S. piceus* and *S. lugubris*). These two insects have little in common, except that they inhabit the same region of Burma, and it is obvious that neither is entitled to a name devised for a member of another genus nine years before the author first became aware of their existence. *Stenodastus*, as perceived by Gorham himself, is therefore a synonym of *Anadastus*. "*Stenodastus*" *lugubris*, Gorh., is

a typical species of *Cænolanguria*, and *S. piceus*, Gorb., is an apterous insect which I refer to the new genus, *Apterodastus*.

The abdominal lines, to which Gorbain attached so much importance, although useful as indicating specific difference, are found in every degree of development in different species, and are therefore useless for the purpose of defining generic limits. The margined base and truncate extremity of the elytra, with the finely-facetted eyes, are the most important features of the genus, which is very nearly related to *Languria*, the original genus of the family. The type-species of the latter genus is the North American *Languria mozardi*, Latr., and the species belonging to it are distinguished from *Anadastus* by the separately rounded and sometimes produced extremities of the elytra, always devoid of a sutural angle, and the triangular terminal sternite of the abdomen.

The species of *Anadastus* are very numerous, and few of them possess well-marked differential features. Many are almost alike in coloration and general appearance and exceedingly difficult to distinguish. The size of the antennal club and the length and direction of the raised lines upon the basal sternite of the abdomen afford the most useful specific characters. The antennæ vary to a remarkable extent, although by almost imperceptible degrees, in the number of joints composing the club, which may be three, four, or five. The correct description of this feature is a matter of opinion which can only be decided arbitrarily, and it is therefore desirable to explain the sense in which terms are used here. If the 7th or 8th joint is distinctly longer than it is broad it is not considered to belong to the club, but if, when the club is examined in its broadest aspect, without any foreshortening, one or both of these joints appear as broad or broader than long, the club is said to be either four- or five-jointed.

Key to the Species of ANADASTUS.

- 1 (74) Clypeus straight, not toothed,
at the front edge.
- 2 (65) Basal sternite bearing longitudinal lines.
- 3 (62) Club of the antenna consisting
of more than three joints.
- 4 (27) Club of the antenna 5-jointed.
- 5 (12) Abdominal lines not distinctly
passing the middle of the
segment.
- 6 (11) Head red.
- 7 (10) Antennæ moderately long.
- 8 (9) Small species (4-5 mm.), with
truncate elytral extremities
and rather broad antennal
club *melanosternus*, Har., p. 210.
- 9 (8) Larger species (7 mm.), with
narrow antennal club, elytra
not truncate *dohrni*, Har., p. 211.
- 10 (7) Antennæ short, *brevicornis*, sp. n., p. 212,

- 11 (6) Head (and body) dark *athoides*, Gorh., p. 212.
 12 (5) Abdominal lines distinctly passing the middle of the segment.
 13 (22) Head dark.
 14 (17) Club of the antenna very broad.
 15 (16) Pronotum uniformly red..... *capitatus*, Gorh., p. 213.
 16 (15) Pronotum with dark anterior patch *loricatus*, sp. n., p. 213.
 17 (14) Club of the antenna loose, not broad.
 18 (21) Metasternum and abdomen black.
 19 (20) Abdominal lines divergent.... *longior*, sp. n., p. 214.
 20 (19) Abdominal lines almost parallel *karenicus*, Gorh., p. 215.
 21 (18) End of the abdomen red..... *ventralis*, Gorh., p. 215.
 22 (13) Head (and prothorax) pale.
 23 (26) Elytra dark.
 24 (25) Abdominal lines divergent.... *amabilis*, sp. n., p. 216.
 25 (24) Abdominal lines parallel..... *dohertyi*, sp. n., p. 216.
 26 (23) Elytra pale *filiformis*, F., p. 217.
 27 (4) Club of the antenna 4-jointed.
 28 (43) Abdominal lines not passing the middle of the basal segment.
 29 (34) Abdominal lines not reaching the middle of the basal segment.
 30 (31) Abdomen dark posteriorly *parvulus*, Wied., p. 218.
 31 (30) Body entirely pale beneath.
 32 (33) Outer half of the femora black *brevilinea*, sp. n., p. 219.
 33 (32) Legs entirely pale *rufiventris*, Fowl., p. 219.
 34 (29) Abdominal lines reaching the middle of the basal segment.
 35 (36) Prothorax dark *lugens*, Gorh., p. 220.
 36 (35) Prothorax red.
 37 (38) Head black *melanops*, sp. n., p. 220.
 38 (37) Head red.
 39 (40) Lower surface entirely red.... *minimus*, Motsch., p. 221.
 40 (39) Abdomen dark.
 41 (42) Club of the antenna not very broad nor abrupt *distinctus*, sp. n., p. 222.
 42 (41) Club of the antenna very broad and abrupt *wiedemanni*, Gorh., p. 222.
 43 (28) Abdominal lines passing the middle of the basal segment.
 44 (49) Eyes relatively small (moderately large species).
 45 (46) Elytral intervals closely punctured *densus*, sp. n., p. 223.
 46 (45) Elytral intervals not closely punctured.
 47 (48) Head strongly punctured *cambojice*, Crotch, p. 224.
 48 (47) Head feebly punctured *nigriventris*, Motsch., p. 224.
 49 (44) Eyes relatively large.
 50 (57) Head and thorax red, elytra dark.

- 51 (52) Abdomen dark *flavimanus*, sp. n., p. 225.
 52 (51) Abdomen red (the tip sometimes excepted).
 53 (54) Not very elongate; legs entirely red *bombayensis*, sp. n., p. 225.
 54 (53) Rather elongate; legs not entirely red.
 55 (56) Legs red, with the knees black. *vicinus*, sp. n., p. 226.
 56 (55) Legs black, except the base of the femora *gratus*, Gorb., p. 227.
 57 (50) Head, thorax and elytra similarly coloured.
 58 (61) Dark coloured.
 59 (60) Elytra not very tapering; dark blue *nauta*, sp. n., p. 227.
 60 (59) Elytra strongly tapering; brassy. *attenuatus*, sp. n., p. 228.
 61 (58) Pale coloured *ochreus*, sp. n., p. 228.
 62 (3) Club of the antenna composed of three joints.
 63 (64) Pronotum not transverse; antennal club not abrupt. *parallelus*, sp. n., p. 229.
 64 (63) Pronotum transverse; antennal club abrupt *ceylonicus*, Fowl., p. 229.
 65 (2) Basal sternite without longitudinal lines.
 66 (71) Elytra banded.
 67 (70) Club of the antenna composed of more than three joints.
 68 (69) Head black; elytra not truncate. *bifasciatus*, Motsch., p. 230.
 69 (68) Head pale; elytra truncate .. *ornatus*, sp. n., p. 231.
 70 (67) Club of the antenna composed of three joints *pulchellus*, sp. n., p. 232.
 71 (66) Elytra not banded.
 72 (73) Club of the antenna very broad and well-defined; elytra dark. *laticornis*, sp. n., p. 232.
 73 (72) Club of the antenna very long, loose and ill-defined; elytra pale *ochreipennis*, Fowl., p. 233.
 74 (1) Clypeus bidentate at the front edge *scutellatus*, Crotch, p. 234.

A. flavus, Motsch., is not included in the above key, as it is known to me only from the description cited below (p. 235).

170. *Anadastus melanosternus*.

Languria melanosterna, Har., Mitth. Münch. Ent. Ver. ii, 1879, p. 82.

Anadastus melanosternus, Gorb., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 276.

Orange-red, with the elytra dark blue and the legs, antennæ and meso- and meta-sternum black.

Not very long or narrow, very shining, with fairly slender antennæ and legs, the former with the first five joints elongate, the 6th a little dilated and the remaining five forming a long,

gradually widening, loosely-articulated club, of which the terminal joint is oval and placed longitudinally. The eyes are moderately large and prominent, and the head and pronotum bear rather scattered punctures, the latter is a little wider than it is long, the sides are well rounded in front and contracted behind, the basal foveæ are short and the space between them rather strongly and closely punctured. The elytra are strongly and regularly striate-punctate, tapering a little behind, with the extremities rather indistinctly truncate and not spinose. The pro- and meta-sterna are very smooth, with a few scattered punctures at the sides, and the abdomen is sparsely punctured, the basal sternite having short parallel carinæ extending to about the middle of the segment.

Length, 4-5 mm.; *breadth*, 1.5 mm.

CEYLON: Balangoda, 1700 ft. (*G. Lewis*, March); Kandy, 1500-1700 ft. (*G. Bryant*, June; *G. Lewis*, Feb.); Kitulgalle, 1700 ft. (*G. Lewis*, Jan.). ASSAM: Patkai Hills (*W. Doherty*). BURMA: Bhamo (*L. Fea*, Sept.); Momeit (*W. Doherty*); Karen Hills, Asciuii Ghecu, 4500-4800 ft. (*L. Fea*, March, April). TENASSERIM: Tavoy (*W. Doherty*). PHILIPPINE ISLANDS. SIAM (*W. Doherty*). SINGAPORE.

Type unknown.

171. *Anadastus dohrni*.

Languria dohrni, Har., Mitth. Münch. Ent. Ver. ii, 1879, p. 85.

Black, with the elytra deep blackish-green, and the head, prothorax, the base of the antennæ and the trochanters red, the anterior part of the head and generally also a median longitudinal band and a very narrow anterior marginal line upon the pronotum, rather indefinitely blackish.

Not very elongate, smooth and shining, with the sides rounded, strongly tapering behind and not truncate; the antennæ with the first six joints distinctly elongate and the last five forming a long, not compactly articulated, gradually dilated club, the 7th, 8th and 11th joints about as broad as they are long and the 9th and 10th strongly transverse. The head and pronotum are moderately strongly punctured, with the eyes not very prominent and separated by about four times their radius, the pronotum slightly transverse, the sides gently rounded in front and moderately contracted behind, the base deeply transversely impressed and the lateral foveæ short but deep. The elytra bear rather closely-punctured striæ, the shoulders are prominent and the sides curvilinear, strongly converging behind, with the extremities narrow and conjointly rounded. The prosternum is almost smooth in the middle and coarsely punctured at the sides, the metasternum is extremely sparsely punctured and the abdomen is finely punctured in the middle and strongly at the sides, the basal sternite bearing a pair of parallel carinæ about half the length of the segment.

Length, 7 mm.; *breadth*, 2 mm.

ASSAM: Khasi Hills.

Type in the Stettin Museum.

172. *Anadastus brevicornis*, sp. nov.

Orange-red, with the elytra deep blue and the legs and abdomen beneath black or dark brown, except the coxæ, trochanters and the base of the femora, which are orange. The antennæ are black, with the first four or five joints reddish.

Parallel-sided, not very elongate, with the legs and antennæ not very slender, the latter with the first six joints stout and moniliform, the 3rd alone feebly elongate, the last five joints transverse, forming a rather broad club, but the 7th joint only slightly produced. The head and pronotum are distinctly punctured, the former with rather large eyes, separated by barely three times their radius, the latter rather wider in front than it is long, with the sides almost straight and strongly convergent to the base; the base is slightly depressed and strongly punctured and the lateral foveæ are deep. The elytra are deeply and closely striate-punctate, parallel-sided and minutely truncate at the extremities. The lower surface is finely and sparsely punctured in the middle and strongly at the sides, and the carinæ upon the basal sternite of the abdomen are only one-quarter of the length of the segment.

Length, 5.5 mm.; *breadth*, 1.5 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

This differs from *A. melanosternus*, Har., by its shorter antennæ, larger eyes and differently coloured underside.

173. *Anadastus athoides*.

Anadastus athoides, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 271.

Dark chocolate-brown, with the head, antennæ and legs black and the elytra light brown, with the punctures black.

Long and slender, very shining, with the elytra tapering behind, the antennæ with the first six joints elongate and the last five transverse, forming a broad club. The head is moderately closely but not strongly punctured, with the eyes not large nor prominent. The pronotum is as long as it is wide and similarly punctured, but more finely at the sides and more coarsely at the base; its sides contract a little in front and behind, the basal foveæ are rather long and subparallel and there is a strong transverse depression between them. The elytra bear regular rows of large, deep and close punctures, the shoulders are not very prominent and the sides are distinctly convergent towards the extremities, which are truncate. The prosternum is transversely wrinkled in the middle and strongly punctured at the sides, the metasternum is sparingly punctured at the sides and more closely

near the middle, and the abdomen is sparsely punctured, with a pair of nearly parallel lines upon the basal sternite, extending to the middle or a very little beyond it.

Length, 7.5–9 mm.; *breadth*, 2 mm.

BURMA: Karen Hills, Cheba, 2900–3500 ft. (*L. Fea*); Ghecu, 4200–4500 ft. (*L. Fea*); Ruby Mines (*W. Doherty*).

Type in the Genoa Museum; co-type in the British Museum.

The specimens from the Ruby Mines district have a slight reddish metallic lustre upon the elytra.

174. *Anadastus capitatus*.

Anadastus capitatus, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 272.

Black and shining, with the prothorax (except the prosternum) and the base of the antennæ bright red and the elytra deep blue.

Rather short in form, with moderately short antennæ and legs, the former with a rather stout five-jointed club, of which all the joints are transverse, joints 2 to 6 elongate and 3 and 4 slightly longer than the rest. The head is rather strongly and evenly punctured and the pronotum a little more finely and sparingly, with the sides minutely, and the base between the foveæ coarsely, punctured. The pronotum is a little broader in front than it is long, with the sides well rounded in front and distinctly contracted behind, the front angles blunt, the hind angles sharp and rectangular, the base scarcely produced in the middle, the foveæ deep but not very long and the disc lightly sulcate along the middle. The elytra are strongly striate-punctate, with a very few minute punctures in the intervals, the sides parallel in front and a little contracted behind and the apices conjointly rounded. There are moderately large scattered punctures at the sides of the pro- and meta-sterna and upon the abdomen, and the basal sternite of the latter bears a pair of close parallel lines extending to two-thirds of its length.

Length, 6–7 mm.; *breadth*, 2 mm.

BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum; co-type in the British Museum.

175. *Anadastus loricatus*, sp. nov.

Deep blood-red, with the head, a vaguely-defined patch at the middle of the front margin of the pronotum, the elytra, legs, the middle of the prosternum and metasternum and the extremity of the abdomen brassy or greenish-black and the antennæ, except at the base, sooty-black.

Elongate, very smooth and shining, with the elytra tapering and a little curvilinear at the sides. The legs are fairly slender. The first six joints of the antenna are slightly elongate and the last five form a rather large and compact club, the four last strongly transverse. The head and pronotum are very finely

and scantily punctured, the eyes separated by about four times their radius. The pronotum is about as long as it is wide, not very convex, the sides feebly rounded in front and not much contracted behind, the front angles distinct but blunt, the base strongly punctured and the lateral foveæ strong and nearly parallel. The elytra bear regular rows of moderately strong punctures and their extremities are very distinctly truncate. The lower surface is strongly but sparingly punctured at the sides and very finely in the middle, and the basal sternite bears a pair of parallel carinæ which extend a little beyond the middle of the segment.

Length, 8 mm.; *breadth*, 2 mm.

SIKKIM.

Type in the British Museum; co-type in M. René Oberthür's Collection.

176. *Anadastus longior*, sp. nov.

Black or greenish-black, very smooth and shining, with the elytra deep blue and the prothorax, with the exception of a dark triangular patch at the anterior edge of the pronotum and a narrow posterior border, orange-red. The ventral and lateral parts of the head are also reddish.

Narrowly elongate, with the elytra conspicuously tapering behind, the antennæ and legs long and slender, the former with the basal joint oval, joints 2 to 6 elongate, and the last five forming a long, narrow, loosely-articulated club. The head and pronotum are very lightly and sparsely punctured, the eyes large and prominent, separated by about three times their radius. The pronotum is scarcely as long as it is wide, very convex in front, depressed behind, with the sides bisinuate, contracted behind, the front angles blunt, the basal foveæ short but deep. The elytra bear rows of not very large or close punctures, the shoulders are a little prominent and the sides are gently curved and converge to the extremities, which are very narrowly truncate. The prosternum is almost smooth, the metasternum has a few fine punctures in the middle and still fewer but rather larger ones at the sides, and the abdomen is very finely and sparsely punctured and has a pair of divergent carinæ extending three-quarters the length of the basal segment.

Length, 4.5–5.5 mm.; *breadth*, 1.5 mm.

SIKKIM: Darjeeling, Gopaldhara, 4720 ft. (*H. Stevens*, May, June, Sept.).

Type in the British Museum.

A little longer and narrower than *A. ventralis*, Gorb., with the elytra more attenuated behind, their puncturation rather finer and the abdomen and metasternum entirely black. In an immature specimen the head and prothorax are entirely red.

177. *Anadastus karenicus*.

Anadastus karenicus, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 272.

Black, very smooth and shining, with the prothorax bright, rather pale, yellow and the elytra dark steely-blue. The front and hind margins of the pronotum are more or less stained black in the middle.

Rather narrowly elongate, with slender legs and antennæ, the elytra twice as long as the head and pronotum together. The head and pronotum are exceedingly minutely and scantily punctured. The pronotum is strongly transverse, not very convex, the sides are strongly rounded in front and contracted behind, the front angles very blunt and not at all produced, the hind angles acute, the base finely margined and deeply transversely sulcate between the short, deep foveæ, with a few large punctures in the sulcus. The scutellum is smooth and transverse. The elytra are strongly punctured in rows and the intervals are not perceptibly punctured, the sides are parallel in front, curvilinear and convergent behind, the shoulders a little prominent and the apices minutely truncate. The lower surface is very smooth, but there are a few punctures at the sides of the pro- and meta-sternum and abdomen, the coxal lines of the first sternite are slightly divergent and the abdomen is clothed with fine silvery hairs. The six basal joints of the antenna are slightly elongate and the five succeeding form a long, loosely-articulated, narrow club, joints 8 to 10 slightly transverse and 11 elongate-oval. The claws have an angular dilatation at the base of each.

Length, 4-6 mm.; *breadth*, 1.5-2 mm.

ASSAM: Manipur (*W. Doherty*); Khasi Hills. BURMA: Karen Hills, Cheba, 2700-3300 ft. (*L. Fea*, Dec.); Ruby Mines (*W. Doherty*).

Type in the Genoa Museum; co-type in the British Museum.

178. *Anadastus ventralis*.

Anadastus ventralis, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 273.

Black, with the prothorax (except a small triangular black mark at the middle of the front margin), the lower surface of the head, and the abdomen, except at the base, bright orange, and the elytra blue-black.

It is very small, moderately elongate, parallel-sided, with rather slender antennæ and legs. The head and the median part of the pronotum, especially at the base of the latter, are rather strongly punctured, but at the sides of the pronotum the punctures are extremely fine. The eyes are large and separated by about three times their radius. The pronotum is a little wider than it is long, with its lateral margins gently rounded in front and a little contracted behind, the basal foveæ deep and the space between them

depressed and coarsely punctured. The elytra are strongly and evenly striate-punctate, with the sides nearly straight and parallel, converging a little near the extremity, and the apices truncate. The metasternum is extremely smooth, with a few scattered punctures at the sides; the abdomen is very minutely and sparingly punctured, except at the sides, and its basal sternite has a pair of parallel carinæ extending a little beyond the middle. The first six joints of the antenna are slightly elongate, the 7th as broad as it is long, the following three rather strongly transverse and the last pear-shaped, the last five forming a not very broad club.

Length, 3.5–4 mm.; *breadth*, 1–1.5 mm.

BURMA: Karen Hills, Cheba, Asciii Ghecu, 2700–4500 ft. (*L. Fea*, Dec., Feb.–April).

Type in the Genoa Museum; co-type in the British Museum.

179. *Anadastus amabilis*, sp. nov.

Black, with the head and prothorax, except the basal margin of the pronotum, bright orange-red and the elytra dark metallic green. The base of the antenna is dark red.

Slender, with the legs long and the antennæ with joints 2 to 6 elongate and the last five forming a broad but not compact club. The head and pronotum bear only a very few minute scattered punctures and the eyes are not large, separated by rather more than three times their radius. The pronotum is very convex, scarcely shorter than it is wide, with the sides strongly bisinuate and contracted at the base and the lateral foveæ rather long. The elytra taper from the shoulders to the extremities, which are distinctly truncate and bear rows of large but not close punctures. The lower surface, like the upper, is very smooth and shining, with very scanty and minute punctures, which are little larger at the sides, and the basal abdominal sternite bears a pair of diverging lines extending to three-quarters of the length of the segment. The claws have an angular dilatation at the base of each and are rather sharply bent beyond it.

Length, 6 mm.; *breadth*, 1.5 mm.

ASSAM: Patkai Hills (*W. Doherty*).

Type in the British Museum. Only the single type-specimen is known.

180. *Anadastus dohertyi*, sp. nov.

Black, with the head and prothorax, except the basal margin of the pronotum, bright orange-red and the elytra dark blue.

Moderately elongate, with fairly slender antennæ and legs, the former with joints 2 to 6 elongate and the last five forming a large loosely-articulated club. The head bears only a few scattered punctures and the eyes are fairly large and separated by a space three times their radius. The pronotum bears a few large punctures at the base, but is otherwise only extremely finely and scantily punctured; it is slightly wider than it is long, with the

sides gently bisinuate and a little contracted at the base, and the lateral foveæ are deep and conspicuous but not long. The elytra bear rows of well-marked but not close punctures, and the sides converge from the shoulders to the extremities, which are not very distinctly truncate. The lower surface is very smooth and shining, feebly punctured, with a few large punctures at the sides of the prosternum, metasternum and abdomen, and the basal sternite of the last bears a pair of parallel carinæ extending three-quarters of its length. The claws have an angular dilatation at the base of each and are rather sharply bent beyond it.

Length, 5-5.5 mm.; *breadth*, 1.5 mm.

ASSAM: Patkai Hills (*W. Doherty*).

Type in the British Museum.

181. *Anadastus filiformis*.

Trogosita filiformis, F., Syst. Eleuth. i, 1801, p. 152.

Languria filiformis, Har., Mitth. Münch. Ent. Ver. iii, 1879, p. 93.

Languria testacea, MacL.,* Annul. Javan. 1825, p. 45.

Languria rufotestacea, Motsch., Schrenck's Reisen im Amurl. ii, 1860, p. 242.

Languria nigripes, Crotch,* Ent. Month. Mag. ix, 1873, p. 184.

Neolanguria filiformis, Gorh., Proc. Zool. Soc. Lond. 1887, p. 361;

Fowl., Wytzman's Gen. Insect., Languriinæ, 1908, pl. i, fig. 7.

Uniformly ochreous or brick-red above and beneath, with the legs and antennæ, except at the base, black.

Moderately elongate, with fairly slender legs and antennæ, the latter with the first six joints elongate and the last five forming a long, rather narrow and loosely-articulated club, of which joints 9 and 10 are strongly transverse and 11 almost round. The head is well punctured, with the eyes prominent and not very small. The pronotum is about as long as it is wide and is similarly punctured, with the base and sides smoother; the sides are well rounded in front, contracted at the base, the lateral foveæ are deeply impressed and rather long and the base has a deep punctured furrow between them. The elytra are strongly striate-punctate, with the shoulders prominent, the sides narrowing from these to the extremities, which are distinctly truncate. The lower surface is very finely and sparsely punctured in the middle and coarsely at the sides, the first sternite having a pair of parallel carinæ, which extend to about three-quarters of the length of the segment.

Length, 5.5-7 mm.; *breadth*, 1.5-2 mm.

BURMA: Toungoo (*G. Q. Corbett*). SIAM. TONKIN. S. CHINA. JAPAN. PHILIPPINE ISLANDS. JAVA. BORNEO.

Type in the Copenhagen Museum, that of *testacea* in the British Museum and that of *nigripes* in the Cambridge University Museum.

Although a very common Malayan species, this seems only to touch the fringe of our area. It has been attributed by Fowler to Southern India, but the specimens collected by Mr. Andrewes,

on which his statement is based, do not belong to it. They are here described under the name *Anadastus ochreus*.

Languria flava, Motsch., from Burma, appears to be a smaller and differently shaped species. The prothorax is described as elongate and very little narrowed behind.

182. *Anadastus parvulus*.

Languria parvula, Wied., Zool. Mag. ii, 1, 1823, p. 47.

Bright red, with the elytra deep blue and the club of the antenna, the distal half of the femur, the tibiæ and the abdomen (except its basal segment) black or nearly black. The tarsi are very dark red.

Moderately elongate, parallel-sided, with fairly stout legs and antennæ, the latter having joints 2 to 6 elongate, 7 a little dilated, and the last four forming a broad club, the last three very broad and compact. The tibiæ, especially the middle ones, are rather short and slightly curved. The head and pronotum are distinctly and rather evenly punctured, the eyes prominent, the pronotum about as broad as it is long, its sides feebly rounded in front and contracted behind, the base feebly depressed and the foveæ strongly marked and nearly parallel. The elytra are rather strongly striate-punctate and their extremities are truncate, with the sutural angle minutely spinose. The prosternum and metasternum are rather strongly punctured at the sides and nearly smooth in the middle and the abdomen is entirely punctured, the basal segment being almost without coxal lines except on the intercoxal process.

Length, 7 mm.; breadth, 2 mm.

UNITED PROVINCES: W. Almora Division, Haldwani District, Kumaon (*H. G. Champion*, May, April); Ranikhet (*H. G. Champion*, Aug.); Chakrata District, Binal Gaol, 3500 ft. (*S. N. Chatterjee*, May); Sarda (*F. W. Champion*). S. INDIA: Coimbatore.

Type in the Copenhagen University Museum.

I am indebted to Mr. Kai L. Henriksen for kindly comparing specimens for me with the type.

This species nearly resembles *A. rufiventris*, Fowl., but the elytra are shorter, the antennæ longer, the tibiæ shorter and not quite straight. The coloration of the abdomen and legs is also distinctive.

This beetle was found at the Madras Agricultural Department at Coimbatore to be a pest of "tenai" or Italian millet (*Setaria italica*), and an account of its life-history has been published by Mr. P. V. Isaac in the Report of the Proceedings of the Third Entomological Meeting, held at Pusa, 1919, p. 919, where figures are given of the insect in all its stages. The eggs are elongate and are inserted by the female into the stem of the plant from 1 to 6 inches above the ground, not more than one egg being placed in an internode. The grub moves up and down the hollow stem and when two or three days old deeply rings the inner wall, so that

the ear withers and the stalk may break off. The attack takes place during the second month after sowing, the egg hatching in five or six days and the larva pupating twenty-five days after emergence. A fortnight is spent in the pupal state and about four days after reaching maturity the beetle bites its way out.

These insects are said to have caused during certain seasons more damage to this crop on the Coimbatore College farm than all other insects combined.

183. *Anadastus brevilinea*, sp. nov.

Orange-red, with the elytra dark blue and the outer half of the femur and the antennal club black.

Moderately elongate, parallel-sided, with the legs and antennæ fairly slender, the former with the middle tibiæ a very little curved, the latter with the first six joints elongate, the 7th a little dilated, about as wide as it is long, and the last four forming a not very broad nor compact club. The head and pronotum are distinctly but not very closely punctured, the eyes large and separated by about two and a half times their radius. The pronotum is about as broad as it is long and not very convex, its sides are well rounded in front and moderately contracted behind, the anterior angles are entirely obsolete, the base not strongly punctured and the lateral foveæ deep but not long. The elytra have regular rows of strong punctures, the sides are straight and the extremities distinctly truncate, with the sutural angle spinose. The lower surface is strongly but not closely punctured at the sides, and more finely but distinctly in the middle, and the first sternite bears a pair of very short carinæ scarcely extending beyond the intercoxal process.

Length, 5-6 mm.; *breadth*, 1.5 mm.

UNITED PROVINCES: Sarda (*F. W. Champion*); Kumaon, Haldwani District (*H. G. Champion*).

Type in the British Museum; co-types in Mr. G. C. Champion's collection.

This closely resembles *A. rufiventris*, Fowl., but it is a little smaller, the eyes are larger, the pronotum has no median groove, the elytra are blue instead of green and the femora dark upon the outer half.

184. *Anadastus rufiventris*.

Stenodastus rufiventris, Fowl.,* Wytzman's Gen. Insect., Langu-rinæ, 1908, p. 33.

Bright red, with the elytra deep metallic green and the club of the antenna black.

Narrowly elongate and parallel-sided, with fairly slender legs and the antennæ having joints 2 to 6 elongate, 7 triangular and almost as broad as it is long, and the last four transverse, forming a moderately broad and compact club. The head and

pronotum are rather strongly and uniformly punctured. The eyes are divided by about four times their radius. The prothorax is distinctly longer than it is wide, not very convex, very lightly grooved along the middle line; the sides are lightly rounded in front and distinctly contracted at the base, the front angles are very blunt, the base strongly margined and deeply punctured and the lateral foveæ deep and divergent. The elytra bear rows of strong, deep and close punctures, the sides are straight and parallel to beyond the middle, where they converge a little, and the apices are sharply truncate. The lower surface is very finely and scantily punctured, with a few larger punctures at the sides, and the first sternite has a pair of very short parallel carinæ, not reaching the middle of the segment.

Length, 6.5 mm.; *breadth*, 1.5 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

Fowler has wrongly assigned the locality Bandra to this species. The specimens from that locality belong to *A. bombayensis*.

185. *Anadastus lugens*.

Anadastus lugens, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 275.

Very shining metallic greenish-black, with the head, the base of the antennæ and the anterior part of the prothorax very dark blood-red.

Rather long and narrow, with the elytra tapering from shoulders to apex. The head and pronotum are distinctly, but not closely, punctured, the punctures at the sides of the latter much finer than those upon the disc, those near the base very strong and close. The pronotum is about as long as it is wide, a little contracted at the base, with the front angles blunt, the base a little produced in the middle, the lateral foveæ rather long and deep and joined by a deep transverse furrow. The elytra are deeply but rather finely striate-punctate, with the sides rather straight and the apices sharply truncate, the inner and outer angles being spinose. The lower surface is rather strongly, but not closely, punctured at the sides and almost smooth in the middle, and the basal segment of the abdomen bears short parallel coxal lines scarcely reaching the middle of the segment. The seven basal joints of the antenna are elongate, and the last four are transverse and form a rather broad and not very loose club, the terminal joint transversely oval.

Length, 6.5–7.5 mm.; *breadth*, 2 mm.

BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum; co-type in the British Museum.

186. *Anadastus melanops*, sp. nov.

Black, with the prothorax above and beneath bright orange-red and the elytra deep metallic blue. The two basal joints of the antennæ are reddish.

Narrowly elongate, very smooth and shining, with rather slender legs and antennæ, the latter having joints 1-7 elongate and the last four distinctly transverse but rather loosely articulated. The head is finely punctured and the eyes are small and far apart, separated by four times their radius. The pronotum is finely and sparsely punctured, except in the middle and near the base, about as long as it is wide, with the sides not much rounded, except near the front margin, but rather strongly convergent to the base. The elytra bear regular rows of large, deep, not very close-set punctures, with very smooth intervals, the sides are slightly arcuate, not parallel, and the apices very slightly and inconspicuously truncate. The lower surface is sparingly punctured, the punctures very large and deep at the sides of the prothorax and metathorax, and very fine in the middle, and the basal sternite of the abdomen bears a pair of parallel carinæ extending to the middle of the segment.

Length, 6 mm.; *breadth*, 1.5 mm.

S. INDIA: Trichinopoly (*P. du Breuil*).

Type in the British Museum. The unique specimen has been presented by the Baron P. de Moffarts.

187. *Anadastus minimus*.

Languria minima, Motsch., Schrenck's Reisen im Amurl. ii, 1860, p. 241; Har., Mith. Münch. Ent. Ver. iii, 1879, p. 82.

Orange-red, with the elytra blue-black, the club of the antennæ black and the extremities of the femora more or less dark.

Small, narrowly elongate and parallel-sided, with the legs and antennæ fairly stout, the tibiæ rather broad and a little curved, the first six joints of the antennæ slightly longer than wide, the seventh about as long as it is wide and the last four transverse, forming a compact, moderately broad club. The head and pronotum are fairly strongly punctured, the eyes large and divided by about four times their radius, the prothorax a little longer than it is wide, with its sides nearly straight, converging from the front to the hind margin, the front angles prominent but blunt, the disc a little impressed along the middle, the base strongly punctured and the lateral foveæ short but distinct. The elytra are closely and rather finely punctured in regular rows, their sides are straight, the shoulders not prominent and the extremities distinctly but narrowly truncate. The lower surface is very smooth and shining, with scattered punctures at the sides, and the first sternite bears a pair of short parallel carinæ, just reaching the middle of the segment.

Length, 4.5 mm.; *breadth*, 1 mm.

CEYLON.

Type probably destroyed.

I have seen only two specimens, in the British Museum collection, acquired from Murray's collection and perhaps captured, like the type, by Nietner.

188. *Anadastus distinctus*.

Anadastus nigriventris, Gorh.* (nec Motsch.), Ann. Mus. Civ. Genova, xxxvi, 1896, p. 275.

Black, with the head and prothorax and the base of the antenna bright red and the elytra deep blue.

Narrowly elongate, parallel-sided, very shining, with slender legs and rather short antennæ, the latter with a compact 4-jointed club, the first five joints elongate and subequal, the 7th a little thickened, the 8th a little produced laterally and the 9th and 10th short and broad. The head is very finely and sparsely punctured and the pronotum rather more strongly, with numerous rather large and close punctures at the posterior edge. The pronotum is scarcely wider than it is long, with the lateral margins feebly rounded in front and slightly contracted behind, the front angles slightly prominent but blunt, the hind angles sharp and rectangular, the basal foveæ deeply incised and rather long. The elytra are very strongly and closely punctured in regular rows and taper a little towards the extremities, where they are truncate, the inner and outer angles being rather sharp. The prosternum is finely transversely wrinkled in front, the metasternum and abdomen bear large scattered punctures at the sides, and the basal sternite of the latter has moderately long parallel coxal lines.

Length, 5-7.5 mm.; breadth, 1.5-2 mm.

BURMA: Karen Hills, Asciuii Ghecu, 4200-4500 ft. (*L. Fea*, March, April); Teinzo (*L. Fea*, May). S. INDIA: Malabar, Dhony Forest (*T. V. Ramakrishna*, May); Palni Hills, 3000-6000 ft. (*P. S. Nathan*, May); Nilgiri Hills, Teppukadu, 2500 ft. (*H. L. Andrewes*, May).

Type in the Genoa Museum; co-type in the British Museum.

The localities given above appear to indicate a discontinuous distribution, but the species is evidently a common one and will probably be found in various parts of India. *A. nigriventris*, Motsch., from Ceylon, has the elytra not bright blue, but almost black, and the employment of the same name by Gorham was accidental.

189. *Anadastus wiedemanni*.

Anadastus wiedemanni, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 271.

Bright red, with the elytra dark blue and the antennæ, except at the base, the legs, except the trochanters, and the lower surface, except that of the head and prothorax, black.

Moderately elongate, not very narrow, very shining, with slender legs and rather stout antennæ, of which the first five joints are elongate (the 3rd distinctly more so than the rest), the 6th and 7th a little thickened and the 8th, 9th and 10th strongly transverse, the last four forming a very broad, rather abrupt club. The eyes are not large or prominent, the head and

pronotum are well punctured, the sides of the latter rounded and a little dilated in front, contracted behind, the basal foveæ deep and divergent and the base depressed and strongly punctured between them. The elytra are strongly and deeply punctured in rows, the sides are parallel in front and rounded behind and the extremities truncate. The lower surface is very smooth and shining, sparsely and minutely punctured, with a few larger punctures at the sides, the basal sternite having a pair of parallel carinæ extending to the middle of the segment.

Length, 8–9 mm.; *breadth*, 2 mm.

BURMA: Karen Hills, Cheba, 2900–3500 ft. (*L. Fea*, Dec.).

ASSAM: Shillong (Pusa Collection, June); Naga Hills, Manipur (*W. Doherty*).

Type in the Genoa Museum; co-type in the British Museum.

A. wiedemanni and *A. distinctus* are closely similar and Gorham was not successful in distinguishing them, including several species under each name. *A. wiedemanni* is rather larger and less elongate, with a distinctly transverse pronotum; its antenna has a shorter and broader 8th joint, and the club is broader and more abrupt.

190. *Anadastus densus*, sp. nov.

Deep blood-red, not very shining, with the elytra deep blue and the abdomen, legs and club of the antenna black.

Elongate, rather cylindrical, parallel-sided, with rather stout legs, the entire surface above and beneath closely and rather evenly punctured. The head and pronotum are deeply and closely punctured, the eyes rather small, divided by more than four times their radius, and the antennæ fairly stout, the first six joints slightly elongate, the 7th about as long as it is wide, the 8th and 11th slightly, the 9th and 10th very strongly, transverse. The pronotum is rather longer than it is wide, with a slight longitudinal median groove, the lateral margins are curvilinear, a little contracted in front and strongly at the base, the basal foveæ deep and moderately long. The scutellum is broad and has only a few punctures. The elytra bear lines of deep closely-set punctures, and the intervals bear similar but irregular punctures; their sides are straight and parallel and the apices are very distinctly truncate but not spinose. The entire lower surface is strongly, deeply and rather closely punctured, and the first sternite bears a pair of close parallel carinæ extending backward a little beyond the middle.

Length, 7 mm.; *breadth*, 2 mm.

S. INDIA: Mt. Kodaikanal (*J. Castets*); Trichinopoly (*P. du Breuil*).

Type in the British Museum; co-types in M. René Oberthür's collection.

This species is easily recognisable by the strong and close puncturation, producing a rather dull surface and partially obscuring the linear puncturation of the elytra.

191. *Anadastus cambodiæ*.

Languria cambodiæ, Crotch,* Cist. Ent. i, 1876, p. 388.

Anadastus cambodiæ, Gorh., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 270.

Black, with the head, prothorax and the base of the antenna bright red and the elytra deep blue. In many specimens the anterior part of the head as far as the eyes is black or nearly black.

Moderately elongate, very shining, with short antennæ, of which the first six joints are elongate, the 7th slightly dilated, the 8th, 9th and 10th strongly transverse and the last nearly round. The eyes are small and not prominent, separated by a distance at least four times their radius. The head and pronotum are rather strongly and uniformly punctured; the pronotum is almost as broad as it is long, not very convex, with the sides feebly bisinuate, the basal foveæ rather long and nearly parallel and the base strongly margined, slightly depressed and deeply punctured. The elytra are strongly striate-punctate, with the sides rather parallel, the shoulders not prominent and the extremities rounded, the extreme apices truncate but not spinose. The prosternum is strongly and rather closely punctured, the metasternum and abdomen a little less strongly and more sparingly, the latter finely in the middle, and its basal sternite bearing parallel carinæ, which extend about three-quarters of the length of the segment and diverge a little at their extremities.

Length, 12 mm.; breadth, 3 mm.

ASSAM: Khasi Hills (Berlin Entom. Inst.). BURMA: Karen Hills, Cheba, 2900–3500 ft. (*L. Fea*, Dec.). TENASSERIM: Meetan (*L. Fea*, April). CAMBODIA (according to Crotch).

Type in the Cambridge University Museum.

192. *Anadastus nigriventris*.

Languria nigriventris, Motsch., Schrenck's Reisen im Amurl. ii, 1860, p. 241.

Black, with the head and prothorax, above and beneath, and the base of the antennæ, red and the elytra very dark blue-black.

Moderately long and parallel-sided, with rather slender legs and antennæ, the first seven joints of the latter elongate and the last four forming a not very broad nor compact club, the terminal joint elongate-oval. The head is finely and sparsely punctured, with the eyes small and separated by nearly five times their radius. The pronotum is a little longer than it is wide, fairly closely and strongly punctured, except at the sides, with a feeble longitudinal median furrow in the posterior half; its sides are strongly rounded in front and contracted behind, the front angles are entirely obsolete and the basal foveæ short and nearly parallel. The elytra are strongly punctured in regular rows, the sides are nearly straight to beyond the middle and the

extremities are rather minutely truncate. The sides of the pro- and meta-sterna and of the abdomen are strongly, very deeply but not closely, punctured, the middle of the two former and of the basal sternite of the abdomen nearly smooth, the latter bearing a pair of parallel carinæ extending a little beyond the middle of the segment.

Length, 8 mm. ; *breadth* 2 mm.

CEYLON (*Nietner*).

Type probably lost.

I have seen a single specimen in M. René Oberthür's collection, derived from the Harold collection and taken by Nietner (like the lost type) in Ceylon. Although the description is inadequate, this is probably Motschulsky's *Languria nigriventris*. It cannot be the insect so called by Harold, which evidently belongs to the new genus *Apterodastus*.

193. *Anadastus flavimanus*, sp. nov.

Orange-red, with the elytra deep metallic blue and the metasternum and abdomen beneath, the club of the antenna and the four posterior legs (in part) black.

Moderately elongate, with rather slender legs and antennæ, the latter with the first seven joints elongate and the last four forming a loosely-jointed club, the 8th joint as long as it is broad, and the two following strongly transverse. The head and pronotum are extremely finely and sparsely punctured, the eyes separated by more than three times their radius, the pronotum short and transverse, its sides gently curved and not much narrowed in front or behind, the base bearing a few large punctures and the lateral foveæ rather long and deep. The elytra bear regular rows of not very large or close punctures; their sides taper towards the extremities, which are sharply truncate. The prothoracic episterna bear a few large punctures, the metasternum is almost devoid of punctures and the abdomen is finely and sparsely punctured, the basal sternite bearing a pair of nearly parallel carinæ extending about three-quarters of its length.

Length, 5.5-7 mm. ; *breadth*, 2 mm.

ASSAM: Khasi Hills (*H. Maxwell-Lefroy*, June). BURMA: Maymyo (*H. L. Andrewes*, May); Bhamo (*L. Fea*, June).

Type in the British Museum; co-types in the Berlin Entomological Institute.

194. *Anadastus bombayensis*, sp. nov.

Bright red, including the legs and antennæ (the club of the latter dark red), with the elytra dark blue.

Moderately elongate and convex, parallel-sided, with the legs and antennæ not very slender, the latter with joints 2 to 7 a little elongate and the last four forming a rather broad club. The head is moderately and rather evenly punctured with the

eyes fairly large, but not prominent, and separated by about four and a half times their radius. The pronotum is about as long as it is wide, rather strongly and evenly punctured, convex, with the sides gently rounded and rather strongly contracted at the base, and the lateral foveæ well-marked and divergent. The elytra bear lines of rather strong and close punctures, with extremely fine and sparse punctures in the intervals, the sides are parallel and the apices slightly truncate. The lower surface is strongly but not closely punctured and the basal sternite of the abdomen bears a pair of slightly diverging carinæ extending beyond the middle of the segment.

Length, 5 mm.; *breadth*, 1.5 mm.

BOMBAY: Bandra (*Dr. A. S. Jayakar*).

Type in the British Museum.

195. *Anadastus vicinus*, sp. nov.

Bright orange-red, with the elytra greenish- or bluish-black and the club of the antenna and the knees black or nearly black.

Moderately elongate, with the legs and antennæ not long, the latter with joints 2 to 6 stout but slightly elongate, 7 globular and the last four forming a broad compact club. The head and pronotum are rather strongly but not closely punctured, the latter more strongly at the base and very finely at the sides. The eyes are divided by more than three times their radius. The pronotum is about as long as it is broad and the sides are strongly rounded in front, the front angles very blunt and the basal foveæ deep and divergent. The elytra bear very regular and uniform rows of large, deep and close punctures, the sides are straight and the apices plainly truncate, with the inner and outer angles well-marked. The prosternum and metasternum are finely and sparsely punctured in the middle and more strongly at the sides, and the abdomen is moderately punctured all over, the basal segment bearing a pair of long parallel carinæ, diverging a little at the end and extending to about three-quarters of the length of the segment.

Length, 7.5 mm.; *breadth*, 2 mm.

BURMA: Magayi, Insein (*C. F. C. Beeson*, Dec.); Karen Hills, Asciuii Ghecu, 4200-4600 ft. (*L. Fea*, April); Theinzeik (*P. Loizeau*). SIAM.

Type in the British Museum; co-types in M. René Oberthür's collection and the Genoa Museum.

This species is very similar to *A. flavimanus*, but has shorter antennæ, stronger puncturation and entirely pale lower surface. It may possibly be Motschulsky's *Languria chulybeipennis*, the type of which probably no longer exists, but the club of the antenna is rather broad and not narrower than that of *A. minimus*, Motsch., if the latter is rightly identified here. Numerous examples of this species in the British and Genoa Museums appear to be immature, the elytra having only a slight bluish suffusion, except in the punctures and along the suture.

196. *Anadastus gratus*.

Anadastus gratus, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 274.

Bright red or orange-red, with the elytra metallic greenish-black and the club of the antenna and the legs (except the bases of the femora) black.

Parallel-sided and rather compact, not very elongate, with not very slender legs and antennæ, the latter having joints 2 to 6 rather attenuate, 7 very feebly dilated internally and the last four more or less transverse and forming a rather loosely-articulated club. The head is very finely and sparingly punctured, the pronotum rather less finely, except at the sides, and strongly and deeply near the base. The pronotum is quadrate, almost as long as it is wide in front, with the sides a very little contracted behind, the front angles blunt, the hind angles acute, the base very obtusely produced in the middle and strongly transversely impressed between the foveæ, which are strongly marked but very short. The elytra are strongly and regularly punctate-striate, with the intervals very smooth and shining, the shoulders slightly tumid and the apices minutely truncate. The prosternum bears only a few minute scattered punctures at the sides, the metasternum a few larger punctures and the abdomen fairly numerous large punctures. The basal sternite has a pair of parallel lines extending about three-quarters of the length of the segment.

Length, 6-9 mm.; *breadth*, 1.5-2 mm.

BURMA: Karen Hills, Cheba, 2700-3300 ft. (*L. Fea*, Dec.).

TENASSERIM: Tavoy (*W. Doherty*).

Type in the Genoa Museum; co-type in the British Museum.

197. *Anadastus nauta*, sp. nov.

Deep blue above and beneath, slightly metallic on the lower surface, the antennæ and legs almost black.

Moderately elongate, parallel-sided, with fairly long antennæ and legs, the former with the first six joints elongate, the 7th a little dilated but scarcely as wide as it is long, and the last four forming a long, loosely-articulated club, the 9th and 10th strongly transverse. The head and pronotum are finely and scantily punctured, the eyes large and divided by about three times their radius. The pronotum is rather transverse, with the sides moderately rounded in front and contracted behind, the front angles very blunt, the base not strongly punctured and the lateral foveæ minute. The elytra bear regular rows of not very strong or deep punctures, the sides are straight and parallel to within a short distance of the extremities and the latter are not very distinctly truncate. The lower surface is very finely and scantily punctured, the metasternum almost unpunctured, and the first abdominal sternite bears a pair of nearly parallel carinæ extending a little beyond the middle of the segment.

Length, 4.5-5 mm.; *breadth*, 1.5 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

In the Genoa Museum is a single specimen from the Karen Hills of almost identical appearance, but with a broader 5-jointed antennal club, longer ventral carinæ and better-developed prothoracic foveæ.

198. *Anadastus attenuatus*, sp. nov.

Brown, with a brassy-green tinge above, the lower surface, the basal half of the femora and the base of the antennæ reddish-brown.

Moderately elongate, with the elytra rather broad at the shoulders and regularly narrowing to the tips, the legs long and slender and the antennæ with the first six joints elongate, the 7th as broad as it is long and produced inwards in the male, the last four transverse, forming a very broad, compact oval club. The head and pronotum are finely and sparingly punctured and the eyes are separated by less than four times their radius. The pronotum is transverse, the sides strongly rounded in front and moderately contracted behind, the front angles very blunt, the base not strongly punctured and the foveæ very short but deep. The elytra bear regular rows of large punctures, they are rather wide at the shoulders and taper strongly to the extremities, which are obliquely truncate, with the inner and outer angles formed by the truncation well-marked. The lower surface is very finely and scantily punctured, with a few large punctures at the sides, and the first sternite bears a pair of parallel carinæ, extending to three-quarters the length of the segment.

The male has the legs and antenna distinctly longer than those of the female, and the 7th joint of the antenna is distinctly produced on one side but, being only half the width of the 8th joint, this does not form part of the broad four-jointed club.

Length, 4.5–6 mm.; *breadth*, 1.5–2 mm.

ASSAM: Patkai Hills (*W. Doherty*); Manipur (*W. Doherty*).

Type in the British Museum.

199. *Anadastus ochreus*, sp. nov.

Pale yellow, with the scutellum, a narrow sutural line upon the elytra, the metasternum, the antennæ, except at the base, the tibiæ, tarsi and outer half of the femora, black or dark brown.

Not very long or slender, rather parallel-sided, with rather slender legs and antennæ, the first six joints of the latter elongate, the 7th a little dilated, the three succeeding strongly transverse and progressively increasing in width, the last a little longer than it is wide. The head and pronotum are distinctly but not strongly nor closely punctured, the eyes moderately large and prominent; the pronotum about as wide as it is long, its sides feebly bisinuate, very slightly contracted in front and behind, the basal foveæ short and the base transversely sulcate,

with a few deep punctures in the sulcus. The elytra are uniformly striate-punctate, with the sides straight, slightly tapering at the extremity, the extreme apices truncate but not spinose. The lower surface of the body is very smooth and shining, with deep scattered punctures at the sides, the basal sternite having long parallel carinæ extending to near the hinder margin of the segment.

Length, 4-4.5 mm.; *breadth*, 1 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

200. *Anadastus parallelus*, sp. nov.

Orange-red, with the elytra deep blue and the club of the antenna black.

Moderately elongate, parallel-sided, with the antennæ and legs fairly slender, the former with the first seven joints elongate, the 8th a little produced outwards but longer than it is wide, and the last three forming a fairly broad club, the tibiæ not longer than the tarsi, and the front and middle ones gently curved. The head and pronotum are rather finely and sparingly punctured, the eyes rather small and separated by about four times their radius. The pronotum is a little longer than wide, its sides gently rounded in front and not very strongly contracted behind, the front angles very blunt, the base not very strongly punctured and the lateral foveæ deep and well-marked. The elytra are moderately strongly punctured and their apices are sharply truncate, the sutural angles acutely spinose. The lower surface is rather strongly but sparingly punctured, and the first sternite has a pair of parallel carinæ which extend to the middle of the segment.

Length, 6 mm.; *breadth*, 1.5 mm.

UNITED PROVINCES: W. Almora, Kumaon, West Bhatkot, 4000 ft. (*H. G. Champion*, May); Kemti Falls, Mussoorie (*M. Cameron*, May).

Type in the British Museum.

This resembles *A. vicinus*, but it is a little smaller, with the pronotum narrower, the legs entirely pale, the 8th antennal joint not transverse and the abdominal carinæ shorter.

201. *Anadastus ceylonicus*.

Anadastus ceylonicus, Fowl,* Wytzman's Gen. Insect., Languriniæ, 1908, p. 31.

Anadastus gratus, var., Gorh., Ann. Soc. Ent. Belg. xlvii, 1903, p. 343.

Orange-red, with the elytra deep blue-black and the club of the antenna black.

Moderately elongate, parallel-sided, very smooth and shining, with not very long legs and antennæ, the latter with the first seven joints a little longer than wide, the 8th a little shorter and

broader and the last three very transverse, forming a compact, but not broad, club. The head and pronotum are distinctly and rather evenly punctured, the eyes not very large, separated by about four times their radius, the pronotum a little wider than it is long, with the sides rounded in front and contracted behind, the front angles very blunt, the base deeply transversely impressed and rather strongly punctured, and the lateral foveæ fine but distinct. The elytra bear rows of deep and close punctures, the sides are straight and the extremities very distinctly truncate, the inner and outer angles of the truncature well-marked and the former spinose. The lower surface of the body is sparingly punctured, very finely in the middle and rather strongly at the sides, and the first sternite bears a pair of parallel carinæ reaching a little beyond the middle of the segment.

Length, 6-8 mm.; *breadth*, 1.5-2 mm.

CEYLON: Kalupahani, Haldummulle; Balangoda, 1776 ft. (G. Lewis, March). S. INDIA: Nilgiri Hills (G. F. Hampson); Cochin State, Parambikulam, 1700-3200 ft. (F. H. Gravely, Sept.).

Type in the British Museum.

Specimens in M. René Oberthür's collection, formerly in that of Baron v. Harold, show this to be the insect regarded by the latter as a variety of his *Languria albertisi*.

202. *Anadastus bifasciatus*.

Languria bifasciata, Motsch., Schrenck's Reisen im Amurl. ii, 1860, p. 241; Har., Mitth. Münch. Ent. Ver. iii, 1879, p. 92.

Stenodastus jucundus, Gorh.,* Ann. Soc. Ent. Belg. xvii, 1903, p. 343.

Languria virgata, Fowl.,* Ann. Soc. Ent. Belg. xxxvii, 1893, p. 73.

Cœnolanguria virgata, Fowl., Wytsman's Gen. Insect., Languriinæ, 1908, p. 18, pl. ii, fig. 5.

Bright orange, with the head, the terminal segments of the abdomen, the club of the antenna and the outer half of the femora black, and the elytra, except a broad transverse median orange band, dark blue.

It is not very slender in shape, the elytra being about one and a half times as long as the head and pronotum together, with rather stout but not short legs, and clothed beneath with greyish setæ, which are sparse, except upon the posterior part of the abdomen. The head is strongly punctured, with the eyes large and not very finely faceted. The pronotum is rather strongly punctured, except close to the lateral margins, about as long as it is wide, with the sides gently rounded and rather strongly convergent to the base, the front angles ob-olete, the hind angles acute but not produced, the base finely margined, transversely impressed and coarsely punctured, and the foveæ strongly marked. The scutellum is smooth, slightly transverse and right-angled at the apex. The elytra are parallel-sided,

coarsely but quite separately punctured in rows, with the shoulders prominent and the extremities jointly rounded. The metasternum and abdomen are rather closely punctured in the middle, less closely but more strongly at the sides, and the first sternite is without coxal lines. The antennæ are rather short and thick, the 3rd joint is decidedly longer than the rest, the 7th is slightly transverse, the 8th strongly, and the last three are very broad and compact.

Length, 5-6.5 mm.; *breadth*, 1.5-2 mm.

UNITED PROVINCES: Kumaon, Haldwani (*H. G. Champion*, March). BENGAL: Barway (*Père Cardon*). S. INDIA: Malabar. CEYLON (*Nietner*, according to Harold). SIAM. S. CHINA: Hongkong.

Type probably lost; that of *virgata* in the Brussels Museum, co-type in the British Museum; type of *jucundus* in the British Museum.

203. *Anadastus ornatus*, sp. nov.

Bright orange-yellow, with the basal and apical thirds of the elytra blue and the last three abdominal sternites, the antennæ, except at the base, and the legs, except the basal part of the femora and the terminal part of the tibiæ, black.

It is not very elongate in shape, the legs are moderately slender and the antennæ rather short. The head is fairly strongly punctured, with the eyes large and divided by less than three times their radius. The pronotum is a little broader than it is long, moderately punctured, with the sides rounded in front and rather strongly contracted before the base, the front angles very blunt, the hind angles acutely produced, the base bearing a few large punctures and the lateral foveæ deep and fairly long. The scutellum is transverse. The elytra bear rows of large punctures, the shoulders are rather prominent and the sides converge a little towards the apices, which are rather minutely truncate. The lower surface is strongly punctured, the mesosternum is long and narrow between the coxæ, and the basal sternite without coxal carinæ. The 3rd joint of the antenna is decidedly longer than the rest, the 4th, 5th and 6th joints are a little elongate and the last five form a not very broad or compact club.

Length, 6.5-7 mm.; *breadth*, 2 mm.

CEYLON (*H. P. Green*). S. INDIA: Coimbatore (*T. V. Ramakrishna*, Dec.); Samanahally, near Bangalore (*Tabourel*, May).

Type in the British Museum.

Found on *Panicum punctatum*.

This is a little larger and a little less convex than *A. bifasciatus*; the head is not dark, the tibiæ are black at the base and the extremities of the elytra are truncate.

204. *Anadastus pulchellus*, sp. nov. (Pl. I, fig. 11.)

Bright yellow above and beneath, including the legs, with the basal and apical fourths of the elytra bright metallic blue and the eyes, the club of the antenna and two or three preceding joints black.

Rather long and narrow, shining but coarsely punctured. The head bears a few rather large punctures and the eyes are large and separated by a space three times as wide as their radius. The pronotum is rather strongly and evenly punctured and about one-third as long again as it is wide, not very convex, with the sides almost straight, but converging from the front to the hind margin, the front angles blunt, the hind angles sharp, but not produced, the base not deeply impressed and the lateral foveæ minute and punctiform. The scutellum is strongly transverse. The elytra bear rows of large punctures not very closely set and becoming fainter towards the extremities; the shoulders are slightly prominent, the sides nearly straight and parallel and the extremities narrowly truncate. The prosternum, metasternum and abdomen are coarsely punctured at the sides and more finely and sparingly in the middle, and the mesosternum is long and narrow. The basal sternite is without coxal carinæ. The legs are moderately slender, the front and middle tibiæ slightly curved. The first seven joints of the antenna are elongate, the 8th as wide as it is long and the 9th and 10th strongly transverse, the three last joints forming a broad compact club.

Length, 4 mm.; *breadth*, 1 mm.

UNITED PROVINCES: Kheri Forest (*H. G. Champion*, Jan.).

Type in the British Museum.

Only a single specimen is known.

205. *Anadastus laticornis*, sp. nov.

Black, with the head and prothorax (above and beneath) bright yellow and the elytra very dark greenish- or bluish-black.

Narrowly elongate, parallel-sided, with the prothorax much longer than it is wide, the legs moderately long and the antennæ short, with the club very broad; the first six joints are bead-like, the 7th transverse, the 8th to the 10th very short and broad (about two and a half times as broad as long) and the 11th large and slightly transverse; the head is fairly strongly punctured, with the eyes small and separated by four times their radius. The pronotum is more finely and more sparingly punctured, about half as long again as it is wide, with the sides almost straight and parallel anteriorly and conspicuously narrowed behind the middle, the front angles blunt, the hind angles acute, the base rather feebly depressed and the lateral foveæ deep and punctiform. The elytra are coarsely punctured, the punctures rather coarser and not arranged in regular rows in the median part. The sides of the elytra are straight and parallel except towards the extremity, and

the apices are abruptly truncate, with well-marked inner and outer angles, and diverge a little at the suture. The lower surface is coarsely but sparingly punctured and the first sternite is without coxal lines.

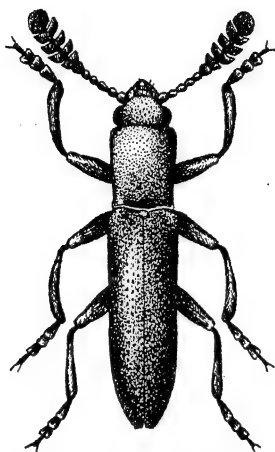


Fig. 39.—*Anadastus laticornis*.

Length, 3.5–5 mm.; breadth, 0.5–1 mm.

CEYLON: Kandy (*G. E. Bryant*, June).

Type in the British Museum.

The very broad antennal club, the elongate prothorax and the large irregular punctures of the elytra make this a very easily recognized species.

206. *Anadastus ochreipennis*.

Languria ochreipennis, Fowl., *Ent. Month. Mag. xxvi, 1890, p. 107.

Cœnolanguria ochreipennis, Fowl., Wytzman's Gen. Insect., *Languriniæ*, 1908, p. 17.

Shining black, with the elytra and abdomen beneath, the latter wholly or along the middle only, bright orange-yellow.

Moderately elongate, very smooth and shining, with the legs and antennæ rather long and slender, the latter very slightly and gradually increasing in width from the second joint onwards and without a definite club, but the last five joints (comprising rather more than half the antenna) larger than the rest. The 2nd and 3rd joints are slightly elongate, the 4th to 9th about as broad as long, the 10th transverse and the last joint elongate-oval. The head and pronotum are very smooth and almost devoid of punctures, the eyes very large and prominent and separated by about two and a half times their radius. The pronotum is very convex, with the sides strongly rounded in front and much narrowed behind, with the front angles obsolete, the base very

deeply transversely sulcate and sparsely punctured and the lateral foveæ punctiform. The elytra bear well-marked rows of deep but not very close-set punctures, they are widest a little behind the base, and the sides converge towards the extremities, which are rounded. The lower surface is extremely smooth and shining and almost devoid of punctures, and the first sternite is without coxal lines. The claw-joint of the tarsus is a little enlarged at the end, enclosing the bases of the claws, which are slender.

Length, 5.5 mm.; *breadth*, 1.5 mm.

ASSAM: Sibsagar (*C. F. C. Beeson*, May). MALAY PENINSULA. PHILIPPINE ISLANDS.

Type in the British Museum.

This is an aberrant species, peculiar in its coloration, in the antennæ without a definite club and the elytra rounded at the end. The last tarsal joint also is of rather unusual shape.

207. *Anadastus scutellatus*.

Languria scutellata, Crotch,* *Cist. Ent.* i, 1876, p. 388.

Anadastus nigrinus, Gorb. (*nec* Wied.), *Ann. Mus. Civ. Genova*, xxxvi, 1896, p. 270.

Red, with the elytra generally darker and suffused with metallic lustre, coppery or greenish-black, and the legs and antennæ

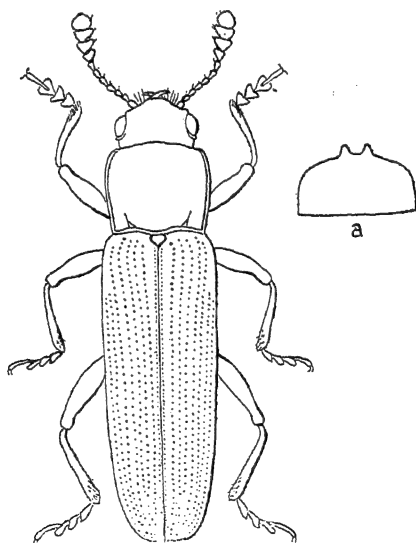


Fig. 40.—*Anadastus scutellatus*; a, outline of clypeus.

reddish-black, with the club of the latter and the distal half of the femora black.

Moderately elongate, parallel-sided, with the legs and antennæ not very long, the latter with the first six joints elongate, the

7th very feebly dilated and the last four forming a rather narrow, moderately compact club, the last three strongly transverse. The head and pronotum are rather strongly and closely punctured, the mandibles very long, the clypeus punctured, rounded and setose in front, bidentate in the middle of the anterior margin, the eyes small and not at all prominent. The pronotum is quadrate, nearly as long as it is wide, with the sides nearly straight and very little contracted behind, the hind angles acute but not produced, the base rather coarsely punctured and the lateral foveæ divergent and rather long. The elytra are deeply and closely striate-punctate, with the shoulders prominent, the sides straight and parallel and the extremities minutely truncate. The prosternum is strongly punctured, the metasternum and abdomen strongly at the sides and less so in the middle, and the basal sternite bears a pair of diverging carinæ reaching to about the middle of the segment. The tips of the mandibles are produced and very acute.

Length, 9-11 mm.; *breadth*, 2.5 mm.

ASSAM: Patkai Hills (*W. Doherty*). BHUTAN. BURMA: Tharrawaddy (*G. Q. Corbett*); Mentanja (*L. Fea*, Aug.); Keantain Mt. (*L. Fea*, May); Karen Hills, Cheba, 2900-3500 ft. (*L. Fea*, Dec.). SIAM. TONKIN. CAMBODIA. MALAY PENINSULA. JAVA. SUMATRA.

Type in the Cambridge Museum of Zoology.

Languria nigrina, Wied., with which Gorham quite wrongly identified this common insect, really belongs to the genus *Cænolanguria*, as I have ascertained by an examination of the type at Copenhagen very kindly made for me by Dr. Kai L. Henriksen.

This is a very abundant species, with a wide range. It bears a rather close resemblance to *A. cambodica*, but is more closely sculptured and less shining. The clypeus is of unusual form, not truncate, and the minute teeth at its front margin appear to be peculiar to this species. The mandibles cross one another and are very long and slender.

208. *Anadastus flavus*.

Languria flava, Motsch., Schrenck's Reisen im Amurl. ii, 1860, p. 242; Har., Mitth. Münch. Ent. Ver. iii, 1879, p. 93.

"Of a uniform reddish testaceous colour, including the extremity of the antennæ and femora, the tibiæ and the eyes more or less blackish; thorax elongate, scarcely rounded at the sides, very little contracted behind, very finely punctured, almost smooth; elytra with shallow punctured striæ.

"*Length*, 2 lines. BURMA."

I do not know this insect, but Harold evidently saw it and has supplemented Motschulsky's description by the following observations:—

"Very like *filiformis*, coloured quite like it, but the thorax a little longer, with less rounded sides, the greatest breadth in the middle. The antennal structure shows a very well-marked

difference. In *filiformis* the sixth joint is elongate, so that the five-jointed club begins at joint seven, but in *flava* the sixth joint is distinctly triangular, so that it forms with the succeeding joints a six-jointed club."

"Length, 6.5 mm."

The three following species of Motschulsky probably belong to the genus *Anadastus*, but the descriptions are insufficient for their recognition:—

Languria fulvipes, Motsch., Schrenck's Reisen im Amurl. ii, 1860, p. 241.

"More compact and broader than *L. mozaridi*, with the same colours, with the exception of the abdomen and legs, which are entirely testaceous red. The puncturation of the striæ is more pronounced. From the EAST INDIES."

Languria cœruleipennis, Motsch., l. c.

"Altogether like *L. fulvipes*, but the thorax is almost square and the abdomen black. Sent from CEYLON by M. Neitner."

Languria chalybeipennis, Motsch., l. c.

"Colours as in the preceding (*Anadastus minimus*, Motsch.) with the exception of the elytra, which are more blackish; the form is stouter, more compact, although the length is a little greater; puncturation in the striæ of the elytra much stronger and deeper; club of the antennæ less broad. From BURMA."

Genus CÆNOLANGURIA.

Cænolanguria, Gorrh., Proc. Zool. Soc. Lond. 1887, p. 361; id., Ann.

Mus. Civ. Genova, xxxvi, 1896, p. 265.

Cænolanguria, Fowl., Wytsman's Gen. Insect., Languriinæ, 1908, p. 17.

TYPE, *Languria coarctata*, Crotch (Malay Archipelago).

Range. India, S. China, Malayan and Papuan Regions, N. Australia.

Elongate in form, but not parallel-sided, generally with moderately slender legs and antennæ. Head without stridulatory area. Eyes small but very prominent and coarsely faceted. Mentum transverse. Ligula rather narrowly bilobed. Labial palpi short, with the terminal joint broadly truncate. Inner lobe of the maxilla short and narrow, terminating in a feeble, minutely trifid tooth (except in *C. bipartita*, where the teeth are strong), the outer lobe very broad, with a very long and thick fringe, the last joint of the palpus long. Mandible acutely bifid at the tip. Antenna with the 2nd joint rather short, joints 3 to 7 elongate and the club generally narrow and loosely jointed, composed of three or four joints, but sometimes of five. Pronotum rather strongly contracted at the base, which is margined, with distinct, but not strongly developed, lateral foveæ.

Elytra long, with well-defined epipleuræ, not margined at the base and with the shoulders not limited internally by longitudinal impressions; the apical margins are separately rounded. Basal sternite of the abdomen with or without coxal lines, which may be long or short.

The two sexes scarcely differ externally, but the female has usually a rather shorter prothorax.

Key to the Species of CÆNOLANGURIA.

- | | |
|---|---------------------------------------|
| 1 (10) Basal sternite of the abdomen with coxal lines. | |
| 2 (7) Pronotum red; elytra dark. | |
| 3 (4) Abdominal lines passing the middle of the segment | <i>andamanica</i> , sp. n., p. 237. |
| 4 (3) Abdominal lines short, not passing the middle of the segment. | |
| 5 (6) Prothorax short, broad in front.... | <i>vernicata</i> , sp. n., p. 238. |
| 6 (5) Prothorax not short nor broad in front | <i>obscura</i> , Fowl., p. 239. |
| 7 (2) Pronotum and elytra dark. | |
| 8 (9) Brown, with the tips of the elytra black | <i>lugubris</i> , Gorh., p. 239. |
| 9 (8) Entirely black | <i>melancholica</i> , sp. n., p. 240. |
| 10 (1) Basal sternite of the abdomen without coxal lines. | |
| 11 (14) Antennæ slender, with the club loose and narrow; elytra not very finely punctured; eyes very small. | |
| 12 (13) Elytra black, with closely-punctured lines | <i>nilgirensis</i> , Gorh., p. 241. |
| 13 (12) Elytra brown, with less closely-punctured lines | <i>birmanica</i> , Har., p. 241. |
| 14 (11) Antennæ stout, with the club rather compact; elytra very finely punctured; eyes not very small. | |
| 15 (18) Upper surface very shining. | |
| 16 (17) Pronotum very convex, broader in front than behind | <i>assamensis</i> , Fowl., p. 240. |
| 17 (16) Pronotum not very convex, equally narrowed in front and behind.... | <i>madrasica</i> , sp. n., p. 242. |
| 18 (15) Upper surface not very shining | <i>bipartita</i> , Har., p. 243. |

209. *Cænolanguria andamanica*, sp. nov.

Chocolate-brown, with the head and prothorax and the base of the antenna bright red, and the elytra dark brown with a slight metallic lustre.

Moderately elongate, very convex, smooth and shining, with fairly stout legs and antennæ. The latter have the first seven joints a little elongate, the 8th slightly broader than it is long and the last three forming a fairly broad club, the 9th and 10th strongly transverse. The head and pronotum are finely, fairly closely and uniformly punctured, the eyes small and

prominent, separated by four times their radius. The pronotum is slightly broader than it is long, almost equally narrowed in front and behind and not strongly rounded at the sides. The elytra are not very long, they bear rows of fine punctures, with extremely minute punctures in the intervals, the sides are curved from shoulders to apices and the extremities taper rapidly. The prosternum is transversely wrinkled, the metasternum finely punctured and the abdomen more strongly, the basal sternite bearing a pair of strongly divergent lines extending beyond the middle of the segment.

Length, 8.5 mm.; *breadth*, 2.5 mm.

ANDAMAN ISLANDS.

Type in the British Museum; co-types in the Berlin Entomological Institute.

210. *Cænolanguria vernicata*, sp. nov.

Shining black, with the head and prothorax, above and beneath, and the base of the antennæ bright orange.

Moderately elongate, with the elytra more than twice as long (in the female two and a half times as long) as the combined head and prothorax, and the antennæ and legs slender. The head and pronotum are finely and rather sparingly punctured, with the eyes prominent but small and far apart, the pronotum transverse, with its sides strongly convergent behind, well rounded in front, the front angles entirely rounded off, the hind angles acute but produced, the base deeply impressed transversely between the foveæ, with large punctures in the sulcus, and the foveæ deep, short and parallel. The scutellum is cordiform, with the apex acute. The elytra are finely punctured in regular rows, with the intervals hardly perceptibly punctured, the shoulders are rounded but prominent, the sides gently curvilinear and converging behind, and the extremities rounded. The prosternum and metasternum are extremely smooth, scarcely perceptibly punctured, and the abdomen is punctured, finely and sparingly in the middle and more coarsely at the sides. The basal sternite has short widely divergent lines. The first seven joints of the antenna are a little elongate, the 3rd distinctly longer than the rest, the 8th is rather triangular and the last three form a loosely-articulated club.

♂. The pronotum is as long as it is wide; that of the ♀ distinctly transverse and more convex.

Length, 5–8.5 mm.; *breadth*, 1.5–2 mm.

CEYLON: Kitulgalle, 1700 ft. (*G. Lewis*, Dec.); Dikoya, 3800–4200 ft. (*G. Lewis*, Dec.); Colombo (*G. Lewis*, June); Kandy (*G. E. Bryant*, June).

Type in the British Museum.

This was regarded by Fowler as the *Languria nigriventris*, Motsch., but that is described as having the head and prothorax closely punctured and the elytra strongly and deeply, and is

grouped with those species having the thorax elongate. *C. vernicata* has a very close resemblance to the S. Indian *C. nilgirisensis*, Gorh., but the elytra are quite black, instead of blue-black as in the latter, and the puncturation is finer. *C. assamensis*, Fowl., which has identical coloration, has also more strongly-punctured elytra, and *Apterodastus ceylonicus*, Har., which is also deceptively like *C. vernicata*, has relatively shorter elytra.

211. *Cænolanguria obscura*.

Cænolanguria obscura, Fowl.,* Wytzman's Gen. Insect., Langurinae, 1908, p. 18.

Very dark blood-red, with the antennæ, legs and metasternum black and the elytra dark greenish- or coppery-black.

Rather narrowly elongate, very smooth and shining, with fairly slender legs and antennæ, the latter with the first six joints elongate, the 7th a little dilated at the end, the 8th triangular and, with the last three, which are strongly transverse, forming a narrow and loosely-articulated club. The head and pronotum are rather finely punctured, the head is broad, the eyes are prominent and far apart, the pronotum about as long as it is wide, with the sides rather straight, converging a little behind, the base deeply impressed transversely and lightly punctured and the basal foveæ rather parallel, deep and conspicuous. The scutellum is cordiform, with the apex sharp. The elytra are very finely punctured in regular rows, the shoulders are prominent, the sides straight and convergent from the shoulders to the extremities, which are separately rounded and a little thickened. The lower surface is very scantily punctured, except upon the abdomen. The carinæ upon the intercoxal process of the abdomen extend a little behind the coxæ and do not diverge very widely.

Length, 8-10 mm.; breadth, 2-2.5 mm.

S. INDIA : Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum; co-type in the Department of Biology, University College, Nottingham.

212. *Cænolanguria lugubris*.

Stenolastus lugubris, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 269.

Chocolate-brown, with a slight metallic lustre above, the head and prothorax sometimes reddish and the antennæ, legs and extremities of the elytra black.

Moderately elongate, with the prothorax short, the elytra parallel-sided from the shoulders to the middle and tapering from there to the extremities. The antennæ have the first seven joints elongate, the 8th as broad as it is long and the last three transverse, forming a fairly broad club. The head and pronotum are very minutely and scantily punctured, the eyes are very

prominent and divided by about three and a half times their radius, and the pronotum has a few large punctures at the base, the sides are strongly rounded in front and contracted behind and the basal foveæ are short and parallel. The elytra bear rows of fine and not very closely-set punctures, the shoulders are prominent, the extremities strongly tapered and the apical margins separately rounded. The prosternum and metasternum are hardly perceptibly punctured, the abdomen bears well-marked punctures upon the first and last sternites and at the sides, and the first sternite bears a pair of divergent lines extending to about the middle of the segment.

Length, 7.5 mm.; *breadth*, 2 mm.

BURMA: Karen Hills, Asciiu Ghecu, 4550-4875 ft. (*L. Fea*, Mar., April). TENASSERIM: Meetan (*L. Fea*, April).

Type in the Genoa Museum; co-type in the British Museum.

213. *Cænolanguria melancholica*, sp. nov.

Shining black, with the elytra very deep blackish-green.

Long and slender, with the sides of the elytra rather straight, feebly tapering from shoulders to apices, and the legs and antennæ rather short and stout, the latter with the 3rd joint a little elongate, the 4th scarcely, the 5th and 6th as broad as long, the 7th and 8th a little transverse and the three last strongly transverse, forming a fairly compact club. The head is moderately punctured, with the eyes fairly large but not very prominent. The pronotum is finely and sparingly punctured and not more strongly at the base; its sides are gently rounded and not very much contracted at the base; the basal foveæ are lightly impressed and not divergent. The elytra are not very strongly or closely punctured, the shoulders are not at all prominent and the extremities are separately and strongly rounded. The prosternum has some large punctures at the sides, the metasternum is extremely scantily and minutely, and the abdomen moderately, punctured; the basal sternite bears a pair of feebly diverging and not very close impressed lines, reaching to three-quarters of the length of the segment.

Length, 6 mm.; *breadth*, 1.5 mm.

S. INDIA: Nilgiri Hills (*A. K. Weld-Downing*).

Type in the British Museum.

214. *Cænolanguria assamensis*.

Languria assamensis, Fowl,* Trans. Ent. Soc. Lond. 1886, p. 24.

Black, with the head and prothorax bright red above and beneath.

Very narrowly elongate and very glossy above and beneath, with the pronotum short and transverse, the elytra prominent at the shoulders and tapering from there to the extremities. The eyes are rather large and prominent. The head and pronotum are very

minutely and sparsely punctured, with a few large punctures in the deep basal sulcus of the latter. The sides of the pronotum are strongly rounded in front and much contracted behind. The elytra are deeply striated, with fine and close punctures in the striæ. The prosternum and metasternum are very smooth and unpunctured and the abdomen is very scantily punctured beneath, except upon the last sternite, which is closely punctured. The basal segment is without coxal lines. The antennæ are fairly stout, with the first six or seven joints elongate and the last four forming a compact and moderately large club, of which the 9th and 10th joints are strongly transverse.

Length, 9–11 mm.; *breadth*, 2·5–3 mm.

ASSAM. BURMA: Karen Hills, Cheba, 2900–3500 ft. (*L. Fea*, Dec.); Paungde (*G. Q. Corbett*); Theinzeik (*P. Loizeau*); Zigon (*C. R. Robbins*, March). TENASSERIM: Thagata (*L. Fea*, April).

Type in the British Museum.

215. *Cænolanguria nilgirensis*.

Cænolanguria nilgirensis, Gorh.,* *Ann. Soc. Ent. Belg.* xlvii, 1903, p. 340.

Black, with the head and prothorax bright orange above and beneath, the basal joint of the antennæ red and the elytra very dark blue-black.

Moderately elongate, with fairly slender legs and antennæ, the latter with the first two joints short, the 3rd rather long, the 4th to the 7th elongate, the 8th triangular, the 9th a little wider than it is long, the 10th strongly transverse and the 11th pear-shaped, the last three forming a narrow loosely-articulated club. The head and pronotum are minutely punctured, the eyes are very small and prominent; the pronotum is transverse, with the sides well rounded in front and strongly contracted behind, the base deeply transversely furrowed and the lateral foveæ short and inconspicuous. The scutellum is transverse. The elytra are deeply striated, the striæ containing close and not very fine punctures; the shoulders are prominent, the sides gently rounded, tapering in the posterior half, and the extremities separately rounded. The lower surface is very minutely and sparsely punctured, except at the sides of the abdomen, which are coarsely punctured. The basal sternite is without coxal lines.

Length, 6–8·5 mm.; *breadth*, 2–2·5 mm.

SOUTH INDIA: Nilgiri Hills (*H. L. Andrewes*); Nadengayan, South Malabar (*N. C. Chatterjee*, Nov.).

Type in the British Museum.

A specimen was taken by Mr. Chatterjee upon a Teak leaf.

216. *Cænolanguria birmanica*.

Languria birmanica, Har.,* *Mitth. Münch. Ent. Ver.* iii, 1879, p. 74.

Deep chocolate-brown, with the head and prothorax red above

and below and the legs and the club of the antenna black, the elytra with a slight metallic lustre.

Moderately elongate, with rather slender legs and antennæ, the latter having the first seven joints elongate, the 8th a little dilated but not quite as wide as it is long, and the last three forming a narrow club, the 9th and 10th transverse and the 11th ovate. The head and pronotum are very finely and sparsely punctured, the eyes small but prominent, the pronotum slightly transverse, with its sides well rounded in front and contracted behind, the basal groove containing a few large but not deep punctures and the lateral foveæ small and punctiform. The elytra bear rows of rather small and not very close or deep punctures, they are parallel-sided in front and narrow from behind the middle to the extremities, which are separately rounded. The prosternum and metasternum are sparingly punctured at the sides, and the abdomen is more strongly but not closely punctured.

Length, 5-7.5 mm.; *breadth*, 1.5-2 mm.

UNITED PROVINCES: Kumaon, W. Almora Division, Haldwani (*H. G. Champion*, April, June); W. Phatkot, 4000 ft. (*H. G. Champion*, May); Arni Gad, Mussoorie (*M. Cameron*, May). SIKKIM: Gopaldhara, Darjeeling, 4720 ft. (*H. Stevens*). BURMA (according to Harold). PENANG (*W. Doherty*).

Type in M. René Oberthür's collection.

Found by Mr. H. G. Champion upon Banana plants.

The elytra are described by Harold as black in colour, but in the fairly numerous examples I have examined they are almost always some shade of brown, although occasionally nearly black.

217. *Cænolanguria madrasica*, sp. nov.

Black, with the head and prothorax (above and beneath) bright red and the elytra deep metallic blue.

Moderately elongate, smooth and shining, with rather stout legs and long antennæ, the latter with joints 3 to 6 elongate, 7 slightly dilated and about as wide as it is long and the last five forming a compact, not very broad, club, 8 triangular and 9 and 10 transverse. The head and pronotum are deeply and distinctly punctured, the eyes large and divided by about two and a half times their radius. The pronotum is slightly transverse, not very convex, the sides are strongly rounded and equally contracted in front and behind, the front angles are rounded, the hind angles slightly obtuse, the base rather broadly margined and coarsely punctured, with the lateral foveæ deep, short and strongly divergent. The elytra are closely and finely punctate-striate, with extremely minute punctures in the intervals, and taper to the apices, which are rather narrowly rounded. The prosternum is very smooth, the metasternum very finely and sparsely punctured and the abdomen rather strongly and evenly punctured, the basal sternite without coxal lines.

Length, 10-11 mm.; *breadth*, 3 mm.

MADRAS.

Type in the British Museum ; co-types in the Hope Department, Oxford Museum.

This is a rather robustly built species, with a prothorax of peculiar shape, less convex than usual and not more contracted at the base than at the front. The club of the antenna appears sometimes 4-jointed and sometimes 5-jointed, owing to a slight difference in the breadth of the 7th joint. This may prove to be a sexual difference.

218. *Cænolanguria bipartita*.

Languria bipartita, Har., Mitth. Münch. Ent. Ver. iii. 1879, p. 62.

Fatua brevicornis, Gorh., * Ann. Soc. Ent. Belg. xlvii, 1903, p. 340 ;

Fowl., Wytsman's Gen. Insect., Languriinae, 1908, pl. ii, fig. 3.

Black, with the head and prothorax bright red and the elytra blue-black, the upper surface not very shining.

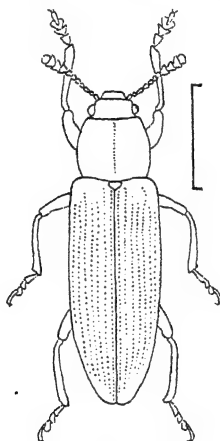


Fig. 41.—*Cænolanguria bipartita*.

Moderately elongate, with rather short antennæ and legs. The eyes are small and far apart. The head and pronotum are fairly closely punctured, the former rather finely and the latter very finely and shallowly, with a few larger punctures near the hind margin. The pronotum is not quite as long as it is wide, the sides are curved, the front angles rounded, the hind angles rectangular, the base has a well-marked sulcus and the basal foveæ are distinctly indicated. The scutellum is transverse but pointed behind. The elytra bear rows of extremely fine and lightly-impressed punctures. The lower surface is smooth, but with large punctures at the sides of the abdomen. The antennæ are short and compact, the 3rd and 4th joints only being slightly elongate,

the 3rd distinctly longer than the 4th, and the club consists of five short transverse joints, the 8th, 9th, and 10th very broad and the 7th little more than half their width.

The two sexes are identical in appearance.

Length, 9-14 mm.; *breadth*, 3-4.5 mm.

MADRAS PRESIDENCY: Kollegal, 3000 ft. (July, taken on *Euphorbia*); Coimbatore (Feb.); Chikkangalur, Bangalore (*Tabourel*, Oberthür Collection); Dindigul (Berlin Entom. Inst.); Mangalore, Vittal Punja (June, Sept.). Ceylon.

Type in the Berlin Museum, that of *brevicornis*, Gorb., in the British Museum.

This insect is frequently taken together with *Macromelea longicornis*, Wied., which appears to have the same range and habits, while the colouring and general aspect of the two are so deceptively similar that they are not distinguishable without careful examination. They were closely associated and compared by Harold, who did not recognise the genus *Macromelea*, and Gorham, who redescribed the present species, referred it to that genus, believing that all the specimens known to him were females and that the males would be found to have longer antennæ. This was not the case, and the very well-marked distinctive feature of *Macromelea* (the entirely peculiar form of the antennæ) being absent here, it is impossible to regard the two insects as congeneric, although the relation between them is certainly interesting and a little puzzling.

C. bipartita is generally a little smaller than *M. longicornis*, and this, combined with the comparative shortness of the legs and antennæ, has not unnaturally led to the supposition that it is a dwarf form of the female of that species. The resemblance between them extends to the mouth-organs, the maxillæ instead of being delicate, as in other species of *Ctenolanguria*, having three strong teeth exactly as in *M. longicornis*. This is perhaps accounted for by the fact that the food-plant is the same.

The elytra of *C. bipartita* are a little less glossy than those of *M. longicornis*, and the rows of punctures are rather finer. The scutellum is broader. But the very short and transverse 7th and 8th joints of the antenna (conspicuously elongate even in the most reduced examples of *M. longicornis*) enable it to be distinguished without the possibility of mistake.

Genus **APTERODASTUS**, nov.

TYPE, *Stenodastus metallescens*, Gorb.

Range. India and Burma.

Not very long or slender, but markedly tapering behind, with the legs moderately stout and the antennæ relatively short, but the first seven joints of the latter elongate and the last three or four transverse, forming a rather narrow but well-marked club. Head rather wide, with the eyes small, far apart, coarsely faceted and prominent. Pronotum longer than wide, scarcely at all

constricted behind, with the hind angles not produced, the base margined and nearly straight, and the basal foveæ deep. Scutellum strongly transverse and very blunt behind. Elytra relatively short, not margined at the base and without prominent shoulders, tapering from behind the shoulders to the extremities, the last separately rounded. Wings rudimentary. Mesosternum truncate, not bifid behind. Metasternum bluntly pointed in front. Intercostal process of the first ventral sternite broad and blunt, its marginal lines not produced behind. Mandible rather long, toothed at a little distance from the acute tip. Maxilla with the inner lobe short, sharply tridentate at the tip, the outer lobe large and broad and the last joint of the palpus long and narrow. Mentum broad, the ligula with strongly divergent membranous wings, the palpus short and stout.

In the males of the type-species the femora of all the legs bear two rows of very minute tubercles along the inner edge, and the tibiæ are finely serrate. In *A. ceylonicus* and *A. minor* the males have the front and middle tibiæ curved.

The five species which I have brought together here form a rather heterogeneous group. Of three of them I have seen only single specimens, and it is possible that when more adequately known one or two more genera will be found necessary.

Key to the Species of APTERODASTUS.

- 1 (6) Front angles of the prothorax blunt.
- 2 (3) Colour uniformly coppery *metallescens*, Gorh., p. 245.
- 3 (2) Colour red and black.
- 4 (5) Club of the antenna not very narrow, the 8th joint triangular.. *ceylonicus*, Har., p. 246.
- 5 (4) Club of the antenna very narrow, the 8th joint rather elongate .. *minor*, sp. n., p. 247.
- 6 (1) Front angles of the prothorax more or less produced and acute.
- 7 (8) Club of the antenna composed of four joints *piceus*, Gorh., p. 247.
- 8 (7) Club of the antenna composed of three joints *funebri*, sp. n., p. 248.

219. *Apterodastus metallescens*.

Stenodastus metallescens, Gorh.,* Ann. Soc. Ent. Belg. xlvii, 1903, p. 342.

Black, with the upper surface of the body coppery, very smooth and shining.

Moderately elongate, tapering from the head to the tips of the elytra, with the shoulders not prominent, the legs rather stout but not short, and the antennæ slender, with the first seven joints elongate, the 8th a little dilated and the last three slightly transverse, forming a narrow club. The head is broad, finely and sparsely punctured, except at the sides, with the eyes small but

very prominent and far apart, separated by about five times their radius. The pronotum is also rather finely and sparsely punctured, a little longer than it is wide, with the sides feebly rounded, scarcely contracted in front or behind, the front angles blunt, the hind angles sharp but not at all produced, the base nearly straight, sulcate and finely margined, and the foveæ minute and punctiform. The elytra are finely striate-punctate, with the sides gently curved and the apices produced, thickened, excised internally and blunt at the ends. The lower surface is very smooth and shining, but with moderately strong punctures at the sides.

♂. The femora of all the legs bear two rows of very minute tubercles along the inner edge, and the tibiæ are finely serrate.

Length, 6.5–10 mm.: *breadth*, 2–2.5 mm.

SOUTH INDIA: Nilgiri Hills (*H. L. Andrewes, Capt. A. K. Wedd-Downing, Sir G. F. Hampson*).

Type in the British Museum.

This is an insect of very peculiar form. The tips of the elytra have a similar appearance to those of *Labidolanguria mucronata*, which is found in the same district.

220. *Apterodastus ceylonicus*.

Languria ceylonica, Har., Mitth. Münch. Ent. Ver. iii, 1879, p. 73.

Black and shining, with the head, prothorax, trochanters, base of the femora and basal part of the antennæ, bright red.

Not long, convex, with the pronotum relatively large and the elytra short, the legs fairly long and stout, and the antennæ slender, with the first seven joints elongate, the 8th as broad as it is long but not closely articulated to the 9th, the 9th and 10th transverse and the last oval, the last three forming a fairly broad and compact club. The head and pronotum are finely punctured, the eyes small, the pronotum about as long as it is broad, with the sides well rounded, contracted in front and behind, with the front angles blunt, the hind angles acute, the base narrowly margined and the foveæ short but almost parallel. The elytra are very convex and bear rows of rather fine but deep punctures; they are widest near the middle and narrow slightly to the shoulders and strongly to the extremities, which are separately rounded. The lower surface is very finely punctured, except at the sides of the metasternum and abdomen.

♂. The front tibiæ are rather strongly incurved and the middle tibiæ a little less so.

Length, 7–10 mm.; *breadth*, 1.5–2.5 mm.

CEYLON: Ramboda [Romboddi] (*Nietner*); S. Ceylon (*R. Thwaites*).

Type unknown.

The species was described from the collection of Nietner, several of whose specimens are in the British Museum. It is identical in its coloration and general appearance with *Ctenolanguria vernicata*, also found in Ceylon.

221. *Apterodastus minor*, sp. nov.

Languria nigriventris, Har. (nec Motsch.), Mitth. Münch. Ent. Ver. iii, 1879, p. 74.

Black and shining, with the head, prothorax and base of the antennæ bright red.

Not long, convex, with the pronotum rather long and the elytra relatively short, the legs fairly stout and the antennæ slender, with joints 3 to 7 moderately elongate and not greatly differing in length, the 8th elongate but a little dilated at the end, and the last three forming a long narrow club, of which the middle joint only is transverse. The head and pronotum are finely and sparsely punctured, the eyes small and far apart, the pronotum scarcely as broad as it is long, with the sides straight and parallel in front, contracted behind, the front angles very blunt, the hind angles sharp, the base narrowly margined and the foveæ very short. The elytra are very convex and bear rows of fine deep punctures; they are widest near the middle, narrowing slightly to the shoulders and strongly to the extremities, which are separately rounded.

♂. The front tibiæ are strongly incurved and the middle tibiæ a little less so.

Length, 6 mm.; *breadth*, 1.5 mm.

CEYLON.

Type in the British Museum.

I have seen only a single specimen, derived from Andrew Murray's collection. The species closely resembles *A. ceylonicus*, but is smaller, with the prothorax less narrowed in front, the club of the antenna very narrow (its first and last joints not at all transverse) and the 8th joint much less dilated. It is scarcely possible that this insect, with its conspicuously shortened elytra, can be the *Languria nigriventris* of Motschulsky, which is described as "a little larger, and especially more elongate, than *L. mozardi*," and is said to have very dark blue elytra.

222. *Apterodastus piceus*.

Stenodastus piceus, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 268.

Ochreous-red, with the antennæ, legs and the tips of the elytra brownish-black.

Not very long, convex, rather broad, tapering anteriorly and posteriorly, with the legs moderately long, the first seven joints of the antenna elongate, the last four forming a club, the 8th a little wider than it is long, the 9th and 10th strongly transverse and the 11th transversely oval. The head and pronotum are finely and sparingly punctured, the eyes small: the sides of the pronotum rounded and contracted in front and behind, the front angles produced and acute, the hind angles acute but not produced, the base rather deeply sulcate and the lateral foveæ short and

divergent. The elytra bear rows of rather fine punctures, which become gradually finer and scantier behind and disappear entirely before the extremities, which are separately rounded but not excised at the suture.

Length, 11 mm.; *breadth*, 3 mm.

BURMA: Karen Hills, Cheba, 2900-3500 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum.

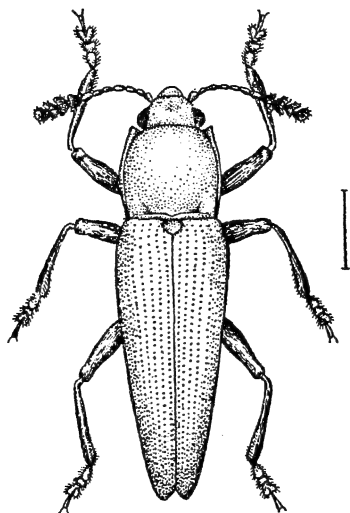


Fig. 42.—*Apterodastus piceus*.

The acute front angles of the thorax constitute a very exceptional feature. It will probably be found necessary eventually to form a new genus for this species and that which follows, but the types being at present unique it is not possible to investigate them as thoroughly as should be done for that purpose. Both are probably apterous. Although called *Stenodastus* by Gorham when "recasting" that genus in 1896, this insect has no resemblance to his original *Stenodastus* of 1887.

223. *Apterodastus funebris*, sp. nov.

Entirely shining black above and beneath.

Not very long, convex, rather broad, tapering posteriorly, with the legs moderately long; joints 2 to 6 of the antenna elongate, 7 and 8 triangular but not broader than long, and the last three transverse, forming an abrupt, rather compact club. The head is rather strongly punctured, with the eyes small and not very prominent. The pronotum is feebly and sparingly punctured, with its sides evenly rounded, and equally narrowed in front and behind, the front angles produced but not very acute, the hind

angles sharp but not produced, and the basal foveæ strongly divergent. The elytra bear rows of well-marked, not very closely-set punctures, the sides are a little curvilinear and the extremities separately rounded and a little divergent at the suture. The pronotum and metasternum are very sparsely punctured, and the abdomen more distinctly but not closely; the punctures are larger at the sides than in the middle. The basal sternite bears a pair of coxal lines parallel at the ends, which extend to the middle of the segment.

Length, 8 mm.; *breadth*, 2·5 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum. The type is unique.

This has the same peculiar and distinctive shape as *A. piceus*, with produced front angles to the prothorax and short tapering elytra. The sculpture also is almost the same, but the head is more strongly punctured. The colour is entirely different, and the club of the antenna is abruptly 3-jointed.

Genus EPILANGURIA.

Epilanguria, Fowl., Wytsman's Gen. Insect., Languriinæ, 1908, p. 18.
Leptolanguria, id., l. c. (new syn.).

TYPE, *E. tenuicornis*, Fowl.

Range. The Indo-Malayan Region.

Body long and narrow, not very convex, with slender legs and antennæ; the latter with joints 3 to 8 elongate, the 3rd not much longer than the 4th and 9 to 11 forming a very narrow and inconspicuous club, the joints scarcely dilated. Eyes prominent and coarsely faceted. Elytra without raised basal margin or intrahumeral depression. Scutellum hollowed. All other features as in *Cænolanguria*.

Epilanguria is a peculiarly modified form of *Cænolanguria*, of slender build, with elongate antennæ, of which the club is extremely narrow and consists of three scarcely dilated joints.

Key to the Species of EPILANGURIA.

Body depressed, prothorax long *depressa*, Gorh., p. 249.
Body not depressed, prothorax not long *tenuicornis*, Fowl., p. 250.

224. *Epilanguria depressa*.

Cænolanguria depressa, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 267.

Shining black or pitchy-black, with the head, prothorax and the base and tip of the antenna red.

Long, narrow and rather flat, with slender antennæ and moderately long legs, all but the basal and penultimate joints of the former elongate and the club very feebly dilated. The tibiæ are rather short, a little arched and flattened. The head is finely

and very sparsely, and the pronotum rather strongly, punctured. The latter is a little longer than it is wide, scarcely convex, with a longitudinal median furrow on its posterior half, uniting with the transverse basal furrow, which contains a few large punctures; the basal foveæ are small and punctiform; its sides are gently rounded in front, a little contracted to the front and rather more behind, with the front angles entirely obsolete and the hind angles

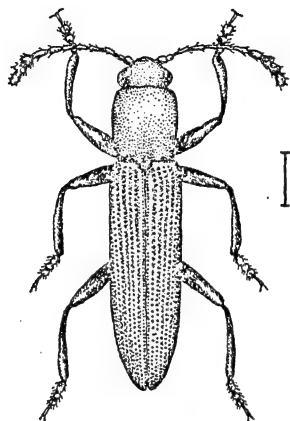


Fig. 43.—*Epilanguria depressa*.

acute. The scutellum is transverse and a little excavated. The elytra are strongly punctate-striate, the punctures large and close together; the shoulders are prominent but rounded, the sides feebly curved and the extremities separately rounded.

Length, 7.5–8.5 mm.; *breadth*, 2 mm.

BURMA: Bhamo (*L. Fea*, June); Tharrawaddy (*G. Q. Corbett*).

Type in the Genoa Museum; co-type in the British Museum.

225. *Epilanguria tenuicornis*.

Epilanguria tenuicornis, Fowl,* Wytsman's Gen. Insect., Languriinæ, 1908, p. 18, pl. ii, fig. 6.

Deep blue-black, very smooth and shining, with the head and prothorax bright red.

Moderately elongate, slightly convex, with fairly slender antennæ and legs; joints 2 to 8 of the former elongate, the three joints composing the club very feebly dilated, the 9th and 11th about as long as wide, the 10th slightly transverse. The head is finely and rather sparingly, the pronotum a little more strongly and closely, punctured. The latter is about as long as it is wide, with the sides gently rounded in front, rather feebly contracted behind, the front angles blunt, the hind angles acute but not produced, the base deeply transversely impressed, with a vestige of a

longitudinal groove joining the transverse impression, and the lateral foveæ strong and conspicuous. The scutellum is deeply hollowed. The elytra bear close and deep, but rather fine, punctures in regular rows, with a few finer punctures in the intervals; the shoulders are prominent, the sides gently rounded and the extremities separately rounded.

Length, 11–12 mm.; *breadth*, 3 mm.

INDIA.

Type in the British Museum.

Two specimens, from the Bowring Collection and bearing no precise locality, are all that are known. They may perhaps be natives of Burma, like other specimens similarly labelled.

Genus **MACROMELEA**.

Macromelea, Hope, Coleopt. Man. iii, 1840, p. 190.

Futua, Crotch, Cist. Ent. i, 1876, p. 382; Fowl., Wytsman's Gen.

Insect., Languriinæ, 1908, p. 16.

TYPE, *Languria longicornis*, Wied.

Range. Southern India and Ceylon.

Moderately elongate, with very slender legs and antennæ, the head small, the prothorax narrow, the elytra broad at the shoulders and tapering to the extremities, which are separately rounded. Eyes coarsely faceted, prominent, but not very large. Antennæ with joints 3 to 7 long, narrow at the base and thickened at the end, the 3rd longer than the rest and much longer than the 4th, the club 4-jointed, the three terminal joints very short and transverse and the 8th triangular (very long in the male). Mandibles strong, bifid at the tip. Inner lobe of the maxilla strong and chitinous, terminating in three sharp teeth, the outer lobe rather small, the palpus long. Mentum strongly transverse, ligula not very broad, with short palpi. Prothorax narrow, not very convex, margined at the base, without lateral foveæ. Scutellum scarcely transverse, pointed behind. Elytra very convex, with well-marked epipleuræ, the apices narrow and rounded.

♂. Antennæ extremely long, joints 3 to 8 greatly attenuated. Legs very slender, especially the front pair, of which the femora and tibiæ are very finely toothed along the inner edge, and the front and middle tibiæ gently curved.

The single species of which this genus consists is a very remarkable one, the elongation of the antennæ of the males giving them a character entirely at variance with that of all the rest of the family and suggesting the CERAMBYCIDÆ.

226. **Macromelea longicornis**.

Languria longicornis, Wied., Zool. Mag. ii, 1, 1823, p. 48; Har., Mitth. Münch. Ent. Ver. iii, 1879, p. 61.

Futua longicornis, Fowl., Wytsman's Gen. Insect., Languriinæ, 1908, pl. ii, fig. 2.

Languria nigripennis, Wied., Zool. Mag. ii, 1, 1823, p. 48.

Languria indica, Serv., Encycl. Méth. x, 1825, p. 71.

Macromelea wiedemanni, Hope,* Col. Man. iii, 1840, p. 191.

"*Languria*" *nepalensis*, Hope,* Gray's Zool. Misc. 1831, p. 22.

Fatua sealyi, Crotch,* Cist. Ent. i, 1876, p. 382.

Fatua lambi, id.,* l. c. (new syn.).

Fatua bowringi, id.,* op. cit. p. 383 (new syn.).

Fatua crassa, id.,* l. c.

Fatua andrewesi, Gorh.,* Ann. Soc. Ent. Belg. xlvii, 1903, p. 339 (new syn.).

Black, with the head and prothorax blood-red and the elytra blue-black and very shining.

Rather narrowly elongate, with very slender antennæ and legs. The head and pronotum are moderately finely and closely

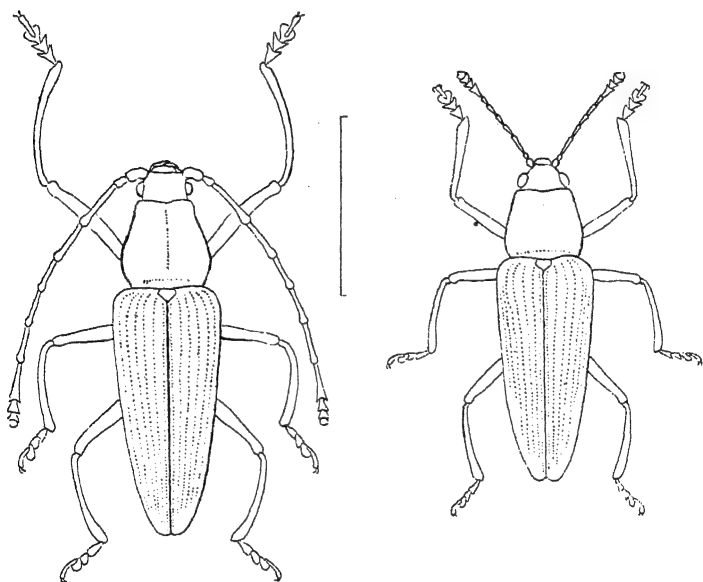


Fig. 44.—*Macromelea longicornis*, male. Fig. 45.—*Macromelea longicornis*, female.

punctured. The widest part of the latter is behind the middle, there is a rather strong basal sulcus and the lateral foveæ are obsolete. The scutellum is pointed behind and not much broader than it is long. The elytra bear regular lines of fine but deep and distinct punctures. The lower surface is very smooth, the metasternum has a longitudinal groove, the abdomen has some large punctures at the sides, and the last sternite is finely punctured and pubescent.

♂. The prothorax is attenuate in front and in large specimens is nearly half as long again as it is wide. The antennæ are extremely long and slender, not much less than the length of the

body in well-developed specimens, the first two joints normal and short, 3 to 7 very elongate, 8 as long as those preceding it but gradually dilating to the end, and the last three forming a short and narrow club, the 9th a little longer than the 10th and 11th. The legs, and especially the front pair, are also elongate, the tibiæ curved and the opposed edges of the front femora and tibiæ have double rows of minute and closely-ranged tubercles.

♀. The pronotum is not quite as long as it is wide and the antennæ reach only as far as the base of the pronotum, the club consisting of four joints, the basal one a little longer than it is wide.

Length, 14–25 mm.; *breadth*, 4–7 mm.

CEYLON: Kandy (Colombo Mus., Feb.); Peradeniya (*E. E. Green*, Mar.); Hambantota (*T. Bainbrigge Fletcher*, Mar.). S. INDIA: Madras, Anaimalai Hills, Coimbatore (Nov., Dec., Feb.); Chikkangalur, Bangalore (*Tabourd*, Oberthür Coll.); Dindigul (*Castels*); Tranquebar.

Type in the (?) Copenhagen Museum; those of *nepalensis*, Hope, and *andrewesi*, Gorb., in the British Museum; those of Crotch in the Cambridge University Museum.

The unfortunate multiplication of names for this insect is due to the difference between the sexes, the variability in the antennæ and legs of the male and, I believe, also to inexact records of its habitat. Specimens in Crotch's collection and in the British Museum (derived from Pascoe) are supposed to have been taken by Lamb in Penang, but similar specimens from Pascoe's collection are labelled Madras, and I am inclined to suspect a mistake. A pair in the British Museum is supposed to have been taken by Cantor in China, but confusion is known to have occurred with Cantor's insects. The localities Nepal and Poona, from which the species is also reported, may possibly be correct, but in recent times it has been brought only from Southern India and Ceylon.

Mr. Bainbrigge Fletcher, in 'Some South Indian Insects,' 1914, p. 291, notes that this species is "not a pest. The beetles are commonly found on *Euphorbia antiquorum*, and larvæ have been found in rotting branches of this plant, which had previously been bored by a Phycitid larva."

Subfamily CLADOXENINÆ.

This is a well-marked section of the family, consisting of small species easily recognisable by the absence of the narrow linear form so characteristic of the LANGURIINÆ. The elytra are much shorter in proportion and generally taper considerably from behind the shoulders to the end. The antennæ have an abrupt, 3-jointed symmetrical club (its basal joint in certain males alone excepted), differing greatly from the asymmetrical club composed of a variable number of joints found in the LANGURIINÆ. The three joints are bead-like, of equal width and not closely

united. The vertex bears a pair of parallel longitudinal stridulatory files. The eyes are coarsely faceted, except in *Cladoxena*. The legs are very slender in that genus, but are sometimes rather stout, and the tarsi are distinctly lobed, with the 4th joint minute and enclosed in the 3rd, except in *Pharaxonotha*, an aberrant genus forming a link with the CRYPTOPHAGIDÆ, in which the tarsi are linear, with the 4th joint small but free. Fowler remarks in Wytsman's Gen. Ins., Languriinæ, p. 37, that this group is "transitional and ought perhaps to be classed with the EROTYLIDÆ proper," but the widely open front coxal cavities alone are sufficient to show that this is quite a mistaken view, their real affinity being rather with the CRYPTOPHAGIDÆ.

Key to the Genera of CLADOXENINÆ.

- | | | |
|---|--|-----------------------------|
| 1 | (2) Basal joints of the tarsus not flattened..... | [p. 254. |
| | | PHARAXONOTHA, Reitter, |
| 2 | (1) Basal joints of the tarsus flattened. | |
| 3 | (6) Pronotum not completely margined at the base. | |
| 4 | (5) Not very narrow; front angles of the pronotum produced .. | [p. 256. |
| | | THALLISELLODES, gen. n., |
| 5 | (4) Rather narrow; front angles of the pronotum not produced.. | [p. 260. |
| | | MICROLANGURIA, Lewis, |
| 6 | (3) Pronotum completely margined at the base. | [p. 261. |
| 7 | (8) Eyes coarsely faceted..... | PARACLADOXENA, Fowl., |
| 8 | (7) Eyes finely faceted | CLADOXENA, Motsch., p. 264. |

Genus **PHARAXONOTHA.**

Pharaxonotha, Reitt., Deutsche Ent. Zeitschr. xix, pt. 3, 1875, pp. 44, 86; Champ., Ent. Month. Mag. 1904, p. 36.

TYPE, *Pharaxonotha kirschi*, Reitt. (Trop. America).

Range. Tropical America, China, Burma, S. India.

Elongate-oval, not tapering behind, with short, not slender, antennæ, the joints bead-like, the 3-jointed club about half as long as the footstalk, not very loose, the joints symmetrical, the 9th and 10th hemispherical and the last pear-shaped. Legs slight, not long, with the tarsi not dilated and the 4th joint minute but free. Eyes rather large, coarsely faceted. Clypeus semicircular, not distinctly separated from the forehead. Occipital region sharply separated from the forehead and bearing a pair of stridulatory files. Pronotum transverse, with the front angles prominent, the hind angles rectangular, the base completely margined and the basal foveæ strong and deep. Scutellum broadly transverse, a little narrowed at the base and scarcely angular behind. Elytra margined at the base, sharply carinate externally and conjointly rounded behind. Prosternal process short and truncate. Mesosternum bifurcate behind. Metasternum acutely notched at the

hind margin to receive the intercoxal process of the basal abdominal sternite.

In its regularly oval shape, short legs and simple (not lobed) 5-jointed tarsi, with the 4th joint free, this genus forms an evident link with the CRYPTOPHAGIDÆ, but the stridulatory files and the thoracic foveæ seem to associate it rather with the present group.

Key to the Species of PHARAXONOTHA.

- Entirely black *nigra*, Gorch., p. 255.
 Ferruginous, with a broad black sutural stripe.. *vittata*, sp. n., p. 255.

227. *Pharaxonotha nigra*.

Thallis (?) *nigra*, Gorch.,* Ann. Soc. Ent. Belg. xxxix, 1895, p. 324.
Pharaxonotha indica, Grouv.,* Ann. Soc. Ent. France, 1903, lxxii,
 p. 127 (new syn.).

Black or dark brown, with the club of the antenna and the legs, and sometimes the margins of the pronotum and elytra, paler.

Elongate-oval, very smooth and shining, with the legs fairly slender but short and the antennæ rather short and thick. The head is rather strongly and closely punctured and the eyes are large and separated by about two and a half times their radius. The pronotum is finely and sparsely punctured, with the front margin a little excised behind each eye, the front angles blunt, the lateral margins feebly rounded in front, almost straight and parallel behind, the hind angles rectangular, the base narrowly margined and the lateral foveæ deep and almost parallel. The elytra are finely punctured in regular and rather deeply-impressed rows. The pro- and meta-sterna are very finely and sparingly punctured and the abdomen a little more strongly and closely.

Length, 4.5–5 mm.; *breadth*, 2 mm.

S. INDIA: Kanara (*T. R. Bell*); Shembaganur, Madura (*P. du Breuil*).

Type in the British Museum.

P. indica, Grouv., by a strange accident, was described from one of the two specimens previously described by Gorham, but attributed to a different family.

This species has a remarkably close resemblance to the typical Mexican species, *P. kirschi*, Reitter.

228. *Pharaxonotha vittata*, sp. nov.

Yellowish-brown, with the head, the base of the antenna, the pronotum, with the exception of broad lateral margins, and a broad stripe common to both elytra and not very sharply defined at the sides, dark brown or black. The dorsal stripe begins immediately behind the scutellum, where it is narrow, broadens gradually to the middle, where it is about one-third the width of the body, and narrows behind, vanishing a little before the end of the elytra.

carinæ, the shoulders not prominent and the extremities more or less rounded. Prosternal process rather long, not narrow, sometimes bilobed behind. Mesosternum short, bilobed behind. Metasternum with long strongly diverging carinæ arising from the middle of the front margin, its hind margin with a very slight curved emargination for the broad intercoxal process of the abdomen. Coxal lines of the basal sternite short, far apart, parallel behind. Legs rather short and stout, with the three basal joints of the tarsi broad.

Numerous Malayan species belong to this genus, but "*Thallisella*" *malasiae*, Crotch, from Borneo, is the only one yet described.

Key to the Species of THALLISELLODES.

- | | | |
|---|--|--------------------------------------|
| 1 | (2) Body very narrow, pronotum scarcely transverse | <i>lateralis</i> , sp. n., p. 257. |
| 2 | (1) Body not very narrow, pronotum strongly transverse. | |
| 3 | (6) Elytra distinctly tapering behind. | |
| 4 | (5) Elytra red-margined | <i>transversus</i> , Gorb., p. 258. |
| 5 | (4) Elytra black | <i>nigripennis</i> , sp. n., p. 258. |
| 6 | (3) Elytra not distinctly tapering behind | <i>angulosus</i> , sp. n., p. 259. |

229. *Thalliselldes lateralis*, sp. nov.

Rusty-red or tawny, with the antennæ, legs, the outer half and apices of each elytron and the metasternum and abdomen beneath, black.

Narrowly elongate, with the elytra scarcely dilated behind the shoulders, and the antennæ and legs rather long and slender. The head is finely and not closely punctured and the eyes are large and not very prominent. The pronotum is extremely sparingly and finely punctured, with the posterior part nearly smooth; it is very little wider than it is long, the sides are very gently curved in front and straight and feebly convergent behind, the front angles a little produced, the hind angles rectangular, the base transversely impressed at a distance from the margin and rather sharply lobed in the middle. The scutellum is subcircular and scarcely angulate behind. The elytra are very finely punctured in rows, with the shoulders slightly prominent, the

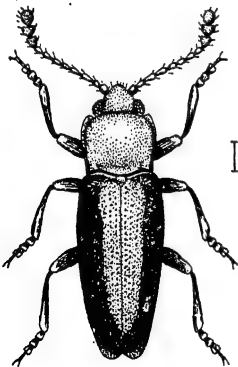


Fig. 47.—*Thalliselldes lateralis*.

sides very gently curved, very little dilated behind the shoulders and tapering to the extremities, which are separately and rather broadly rounded. Joints 2 to 8 of the antenna are elongate,

9 and 10 subequal and 11 pear-shaped. The lower surface is fairly strongly punctured at the sides, very finely and sparsely in the middle. The metasternum bears long, straight, diverging lines and the basal sternite of the abdomen has short, distant and nearly parallel lines.

Length, 4 mm.; *breadth*, 1.5 mm.

Sikkim: Darjeeling, Gopaldhara, 4720 ft. (*H. Stevens*, June).

Type in the British Museum.

A single specimen. It was attracted by light.

230. *Thallisellodes transversus*.

Thallis transversus, Gorb.,* *Ann. Soc. Ent. Belg.* xxxix, 1895, p. 325.

Red, with the elytra, except a rather narrow border surrounding each (but broader posteriorly) and the club of the antenna black and the lower surface dark brown with the abdomen yellow.

Elongate-oval, smooth and shining, moderately convex. The head and pronotum are moderately punctured; the latter not very convex, about one-third as broad again as it is long, with the sides rather feebly rounded, scarcely perceptibly toothed, nearly parallel behind, the front angles bluntly produced, the hind angles right angles, the base rather strongly lobed in the middle and rather deeply transversely impressed. The elytra are convex, moderately long, with fine but rather close and distinct punctures in regular rows, the sides are evenly rounded, dilating a little behind the shoulders and narrowing from there to the extremities, which are a little flattened and separately rounded. The legs are rather stout and the antennæ moderately long and slender. The prosternum is coarsely punctured, with the prosternal process broadly bifid behind and rather deeply impressed longitudinally. The metasternum is finely and very sparsely punctured, with large punctures at the sides and strongly divergent coxal lines extending to the middle. The abdomen is very finely and sparsely punctured, with very short and distant coxal lines upon the basal segment.

Length, 4 mm.; *breadth*, 1.5 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*); Madura (*C. Somers-Smith*).

Type in the British Museum.

This is very similar to *T. nigripennis*, but the coloration is different and the pronotum much less convex. The original type-specimen is in bad preservation, and does not show the pattern exhibited by the example from the Nilgiri Hills.

231. *Thallisellodes nigripennis*, sp. nov.

Red, with the elytra black and the antennæ dark red.

Elongate-oval, smooth and shining, convex, distinctly but not strongly tapered behind. The head and pronotum are finely and sparingly punctured. The pronotum is very convex, about one

and a half times as wide as it is long, with its lateral margins rounded and bearing four or five minute teeth on each side, the front angles moderately sharp, the hind angles obtuse, and the base strongly transversely impressed. The elytra are very finely punctured in regular rows, the sides are evenly rounded, dilating a little behind the shoulders and narrowing from there to the extremities, which are rounded but not divergent. The legs are moderately stout and the antennæ slender, with the three club joints small. The prosternum is coarsely but sparingly punctured, the prosternal process rather broad, parallel-sided and bifid behind, the metasternum is coarsely punctured at the sides and finely and very sparingly in the middle, with long diverging coxal lines extending beyond the middle. The abdomen is moderately punctured beneath, and the basal sternite bears short parallel coxal lines.

Length, 3 mm.; *breadth*, 1 mm.

TENASSERIM: Tavoy (*W. Doherty*).

Type in the British Museum.

This species resembles *T. malasiae*, Crotch, but its elytra are rather longer and more regularly rounded at the sides.

232. *Thallisellodes angulosus*, sp. nov.

Deep blood-red or chestnut-red, including the antennæ and legs, with the elytra black.

Oblong, rather narrow, not tapering behind, moderately convex, not very shining, with the legs and antennæ rather short. The head is closely and evenly punctured and the eyes are very prominent but not large. The pronotum is strongly transverse, moderately convex and closely punctured, with the lateral margins rounded and each furnished with three minute sharp and nearly equidistant angulations; its anterior angles are prominent but not very sharp, the hind angles acutely rectangular, and there is a deep transverse sulcation before the base. The scutellum is strongly transverse. The elytra are closely and finely punctured in regular rows; the sides are parallel in front, gently curved behind, the shoulders scarcely prominent and the extremities conjointly rounded. The 3rd joint of the antenna is elongate, the 4th to 8th are scarcely longer than wide and the last three short but loosely articulated. The prosternum is almost smooth in the middle and strongly punctured at the sides, the metasternum and abdomen are very lightly punctured and the basal sternite of the last has a pair of long, strongly diverging coxal lines.

Length, 2.5 mm.; *breadth*, 1 mm.

CEYLON: Kotte (April); Colombo (*G. Lewis*, April).
MOLUCCAS: Burn I. (*L. J. Toxopeus*, Jan., Feb., Mar.).

Type in the British Museum.

The two widely separated islands in which this has been found seem to indicate that its actual distribution is a very wide one.

Genus **MICROLANGURIA.**

Microlanguria, Lewis, Journ. Linn. Soc. Lond., Zool. xvii, 1883, p. 345.

Microcladorena, Fowl., Trans. Ent. Soc. Lond. 1886, p. 312; id., Wytsman's Gen. Insect., Languriinae, 1908, p. 37.

Platycladorena, Kraatz, Deutsche Ent. Zeitschr. 1899, p. 312 (new syn.).

TYPE, *Languria jansoni*, Crotch.

RANGE. Oriental Region, Madagascar, Africa.

Moderately elongate, not flattened, with fairly slender antennæ and legs. Eyes very coarsely faceted, not very small. Vertex with a pair of longitudinal stridulatory files. Joints 2 to 7 of the antenna elongate, the 8th short, the last three forming a symmetrical loosely-articulated club. Pronotum very convex, subquadrate, a little narrowed behind, transversely depressed and not margined at the base, with the front angles very blunt, not prominent, the hind angles rectangular, coinciding with the shoulders of the elytra, and the basal foveæ punctiform. Scutellum transverse, narrowed at the base and broad behind. Elytra with well-marked, moderately wide epipleuræ, the shoulders not very prominent, the extremities separately rounded. Prosternal process rather long and narrow, truncate behind, the coxal cavities widely open. Mesosternum rather narrow between the coxæ, deeply bifid behind. Metasternum with diverging coxal lines. Basal segment of the abdomen with a rather broad, rounded intercoxal process and short coxal lines wide apart behind. Maxilla with nearly equal lobes, the inner one strong, armed with a sharp curved terminal tooth, the outer one rather reduced, a little narrower than the inner one and not dilated at the extremity; palpus stout, 2nd joint very short, the last fusiform. Labium narrow, tongue-shaped, with small membranous terminal lobes; palpus short and stout, with a large securiform terminal joint.

233. **Microlanguria jansoni.**

Languria jansoni, Crotch,* Ent. Month. Mag. ix, 1873, p. 185; Har., Mitth. Münch. Ent. Ver. iii, 1879, p. 63; Lewis, Journ. Linn. Soc. Lond., Zool. xvii, 1883, p. 348.

Microcladorena jansoni, Fowl., Trans. Ent. Soc. Lond. 1886, p. 312, pl. iii, fig. 9.

Platycladorena borneensis, Kraatz, Deutsche Ent. Zeitschr. 1899, p. 313 (new syn.).

Reddish-yellow, with the legs a little paler and the club of the antennæ a little darker.

Moderately elongate, smooth and shining, with the legs fairly stout and the antennæ fairly slender; joints 2 to 7 of the latter elongate, 3 to 8 successively diminishing in length, 9 and 10 approximately semicircular and the last pear-shaped. The head

and pronotum are sparsely punctured and the eyes are divided by three times their radius. The pronotum is slightly transverse, strongly convex, with the front margin well rounded, the lateral margins feebly rounded and a very little narrowed behind, the front angles very blunt, the hind angles rectangular, the base with a deep transverse groove and lobed in the middle. The elytra have curvilinear sides, converging slightly to the extremities, and bear lines of moderately fine and close punctures. The prosternum is rather strongly but not closely punctured, the metasternum very finely and sparsely, and the abdomen is very minutely punctured and setose.

Length, 2.5–4 mm.; *breadth*, 1–1.5 mm.

CEYLON: Kandy (*G. E. Bryant*, June); Colombo (*G. Lewis*, April); Balangoda, 1776 ft. (*G. Lewis*, March). S. INDIA: Nilgiri Hills (*H. L. Andrewes*). S. CHINA. JAPAN. BORNEO.

Type in the British Museum, co-type in the Cambridge University Museum; type of *borneensis* in the Berlin Entomological Institute.

This little insect will no doubt be found to have a much more general distribution than is here indicated.

Genus PARACLADOXENA.

Paracladoxena, Fowl., Trans. Ent. Soc. Lond. 1886, p. 310; id., Wytsman's Gen. Insect., Languriinæ, 1908, p. 38.

TYPE, *Paracladoxena abundans*, Arr. (*P. trifoliata*, Fowl.).

Range. Ceylon and South India.

Form rather short, very smooth, with stout legs and moderately slender antennæ, the club of the latter long and narrow, consisting of three very loosely connected joints of equal width. Eyes rather small, prominent and very coarsely faceted. Vertex bearing a pair of stridulatory files close together near the middle line. Pronotum broad in front, strongly contracted behind, with the front angles a little produced, the hind angles acute, the base margined and the basal foveæ small. Scutellum not broad, narrowed at the base and angulate behind. Elytra very convex, dilated behind the shoulders and strongly tapered behind, with the extremities separately rounded and rather thickened, the epipleuræ wide, wrapping the body beneath, and separated by a very sharp entire carina on each side. Prosternum forming a quadrate process behind the front coxæ, mesosternum bilobed behind and the basal sternite of the abdomen with a broad rounded intercoxal process. Mandible not long, bifid at the tip. Maxilla with both lobes long and narrow, the inner one ending in a very sharp spine. Mentum transverse, ligula narrow, bilobed, palpus with the last joint oval.

In the male the antennæ and legs may be longer and the elytra shorter than in the female.

Key to the Species of PARACLADOXENA.

- 1 (4) Elytra very smooth and shining,
produced at the apices.
- 2 (3) Elytra without markings *abundans*, sp. n., p. 262.
- 3 (2) Elytra with pale marks *bipustulata*, Fowl., p. 263.
- 4 (1) Elytra not very smooth and shining,
not produced at the apices *brevis*, sp. n., p. 263.

234. *Paracladoxena abundans*, sp. nov.

Paracladoxena trifoliata. Fowl. (*non* Har.), Trans. Ent. Soc. Lond. 1886, p. 311, pl. iii, fig. 10; id., Wytzman's Gen. Insect., Languriinæ, 1908, p. 31, pl. iii, fig. 11; Lewis, Journ. Linn. Soc. Lond., Zool. xvii, p. 348.

Reddish-brown, with a golden or coppery suffusion, the legs and antennæ yellow, with the knees a little darker and the antennal club nearly black.

Moderately elongate, very smooth and shining, with slender antennæ and rather long but stout legs. The head is distinctly and evenly punctured and the eyes are small but prominent. The pronotum is transverse, very convex in front, sparingly and extremely finely punctured, with the lateral margins bisinuate, strongly contracted behind, all the angles produced, the front ones blunt and the hind ones acute, the base deeply transversely impressed, with a single row of deep punctures, and the lateral foveæ minute and punctiform. The elytra are about twice as long as their combined width and bear regular rows of extremely fine punctures; they dilate a little behind the shoulders and strongly narrow from there to the extremities, which are separately rounded. The lower surface is distinctly punctured at the sides and nearly smooth in the middle.

Length, 2.5-4.5 mm.; *breadth*, 1-1.5 mm.

CEYLON: Kitulgalle, 1700 ft., Bogawantalawa, 4900-5200 ft., Dikoya, 3800-4200 ft., Horton Plains, 6000 ft. (*G. Lewis*, Dec.-Mar.); Kandy (*G. E. Bryant*, June, July). S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

This species has been found in considerable numbers clinging to foliage. The variation in size is very great. The males seem to be commonly larger than the females, with longer and stouter legs. Fowler has described and figured the species under the name *trifoliata*, Har., and remarks "Von Harold has confirmed the species for me and, as it is certainly his *L. trifoliata*, I have retained his name." Evidently Harold did not make a sufficiently careful comparison, for his *trifoliata*, of which I have examined the undoubted type in M. Oberthür's collection, is the species described by Fowler as *Cladoxena pura*. Harold's original description does not apply to *P. abundans* in several respects—*e. g.* blackish tarsi, finely-granulated eyes and punctate-striate elytra. It is not impossible that *Cladoxena picipes*, Motsch., was described

from a specimen of this species with discoloured legs, but Motschulsky's specimens being probably no longer in existence and his description quite inconclusive, this name, which would be peculiarly inappropriate, must be allowed to lapse.

235. *Paracladoxena bipustulata*.

Paracladoxena bipustulata, Fowl.,* Trans. Ent. Soc. Lond. 1886, p. 311, pl. iii, fig. 11; id., Wytzman's Gen. Insect., Languriinæ, 1908, pl. iii, fig. 11.

? *Cladoxena picipes*, Motsch., Bull. Soc. Nat. Mosc. xxxix, 1, 1866, p. 428.

Reddish-brown, with a golden lustre upon the upper surface, the antennæ, legs and lower surface yellowish and each elytron ornamented with a small transverse yellow spot near the suture behind the middle. The extremities and the hinder part of the inner and outer edges of the elytra are reddish.

Moderately elongate, extremely smooth and shining, with slender antennæ and rather stout legs, the former with the first eight joints elongate and subequal, and the last three very loosely articulated, the 9th and 10th semicircular and the 11th spherical. The head is distinctly and evenly punctured and the eyes are small but very prominent. The pronotum is almost as long as it is wide, very convex in front and sparsely and extremely finely punctured, with the lateral margins strongly rounded in front, straight and convergent behind, the front angles bluntly, and the hind angles acutely, produced, the base transversely impressed and irregularly punctured and the lateral foveæ deep and punctiform. The elytra are about twice as long as their combined width and bear regular rows of extremely fine punctures; they dilate a little behind the shoulders and taper strongly from there to the extremities, which are narrow and separately rounded. The sides of the pro- and meta-sterna are rather strongly punctured and those of the abdomen rather finely.

♂. All the legs are elongate, especially the front pair, and the front tarsi are very long.

Length, 3-5 mm.; *breadth*, 1-2 mm.

CEYLON: Bogawantalawa, 4900-5200 ft. (*G. Lewis*, March, April); Nuwara Eliya, 6000-8000 ft. (*G. Lewis*, Feb.).

Type in the British Museum.

Motschulsky's name is not used here because the identification of *Cladoxena picipes* with this species is not more than a probability.

236. *Paracladoxena brevis*, sp. nov.

Upper surface dark chocolate-brown, with a slight golden-green lustre, excepting the clypeus, a rather indefinite oblique mark before the extremity of each elytron and the apical margin of the elytron; these latter parts, with the antennæ, legs and lower surface, are reddish-yellow.

Elongate-oval, very convex, with very short elytra and slender legs and antennæ. The head is coarsely and closely punctured, with the eyes small but extremely prominent. The pronotum is a little broader than it is long, highly convex in front, rather strongly and evenly punctured, with the lateral margins well rounded, the front angles depressed and bluntly rectangular, the hind angles sharply rectangular and the base, like the sides, completely margined; the basal foveæ are punctiform and indistinct and there are large punctures near the base. The

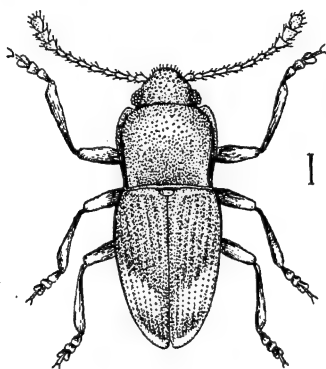


Fig. 48.—*Paracladoxena brevis*.

scutellum is strongly transverse. The elytra are about twice as long as their conjoint breadth, with impressed lines of deep and close but not very regular punctures; they are strongly convex, with rounded sides, feebly dilating a little behind the shoulders and narrowing to the extremities, which are blunted, but not produced nor distinctly separated. The prothorax beneath and the metasternum are coarsely, and the abdomen finely and densely, punctured.

♂. The legs are stouter, the front tarsi more dilated, and the elytra a little more narrowed behind.

Length, 4–4.5 mm.; *breadth*, 2 mm.

S. INDIA: Kodaikanal (*T. V. Campbell*).

Type in the British Museum; co-type in Mr. E. A. Butler's collection.

Genus **CLADOXENA**.

Cladoxena, Motsch., Bull. Soc. Nat. Mosc. xxxix, 1, 1866, p. 428; Fowl., Trans. Ent. Soc. Lond. 1886, p. 308; id., Wytsman's Gen. Insect., Languriinæ, 1908, p. 37.

TYPE, *Cladoxena maculata*, Motsch.

Range. Ceylon.

Rather long and narrow, with slender legs and antennæ. Eyes finely faceted and far apart. Vertex with a pair of stridulatory

files. Pronotum margined at the base, with the lateral foveæ not well developed. Epipleuræ of the elytra well marked, but narrow behind, and the extremities thickened and separately rounded. Prosternal process long, truncate behind, front coxal cavities widely open behind. Mesosternum long and narrow between the coxæ, bifurcate behind. Antennæ slender, with the first seven joints elongate, the 8th shorter and the last three forming a very loosely-articulated symmetrical club. Mandible short and triangular, bifid at the tip. Maxilla with the two lobes long and narrow, the inner one terminating in a very acute spine, the last joint of the palpus long and pointed. Mentum broad, ligula narrowly bilobed, palpi very short, with the last joint oval.

The front legs of the male are elongate and the femora bear a few rather irregularly-placed tubercles along their anterior edge. The basal club joint of the antenna may have an excision on one side in this sex.

Key to the Species of CLADOXENA.

- 1 (4) Upper surface well punctured.
- 2 (3) Elytra with pale markings *maculata*, Motsch., p. 265.
- 3 (2) Elytra without pale markings .. *trifoliata*, Har., p. 266.
- 4 (1) Upper surface feebly punctured .. *flaviclavata*, sp. n., p. 266.

237. *Cladoxena maculata*.

Cladoxena maculata, Motsch., Bull. Soc. Nat. Mosc. xxxix, 1, 1866, p. 428; Fowl., Trans. Ent. Soc. Lond. 1886, p. 309, pl. iii, fig. 6; id., Wytsman's Gen. Insect., Languriinæ, 1908, p. 37, pl. iii, fig. 10.

Bright yellow, with the antennal club, the posterior part of the head, the pronotum and elytra, brown with a metallic lustre, and the elytra each decorated with an elongate yellow median spot behind the base, a short longitudinal line near the suture before the middle and a similar one before the extremity, with a roundish median spot between the last two. The base and sides of the pronotum and the sides of the elytra are sometimes pale.

Rather long and narrow, with slender legs, and very shining. The head is rather strongly and closely punctured, the pronotum rather less closely. The latter is very convex, about as long as it is wide, with the sides strongly rounded in front and contracted behind, the front angles rather blunt and the hind angles sharply rectangular. The elytra are deeply punctate-striate, with the shoulders prominent, the sides feebly dilated behind the shoulders and tapering from there to the extremities, which are thickened and separately rounded. The pro- and meta-sterna are strongly punctured at the sides and almost unpunctured in the middle, and the abdomen is finely punctured, with very short diverging lines upon the basal sternite. Joints 2 to 7 of the antennæ are elongate, 8 bead-like, 9 and 10 transverse and 11 round.

♂. The front legs are very long and slender, the femora bear a few minute tubercles, placed rather far apart, and the three basal

joints of the front tarsi are much longer and narrower than in the female.

Length, 3.5–5 mm.; *breadth*, 1–1.5 mm.

CEYLON: Bogawantalawa, 4900–5200 ft. (*G. Lewis*, March, April); Dikoya, 3800–4200 ft. (*G. Lewis*, Dec., Jan., Feb.); Kitulgalle, 1700 ft. (*G. Lewis*, Jan.).

Type probably lost.

238. *Cladoxena trifoliata*.

Languria trifoliata, Har.,* *Mitth. Münch. Ent. Ver.* iii, 1879, p. 78.

Cladoxena pura, Fowl.,* *Trans. Ent. Soc. Lond.* 1886, p. 310, pl. iii, fig. 5 (new syn.).

? *Cladoxena rufipes*, Motsch., *Bull. Soc. Nat. Mosc.* xxxix, 1, 1866, p. 429.

Deep golden-green, with the base of the antenna, the femora and the tibiæ bright red or yellow and the tarsi and club of the antenna black.

Moderately elongate, with slender legs and antennæ, and very smooth and shining. The head and pronotum are strongly and rather closely punctured and the latter is transverse and convex, with the sides strongly rounded in front and contracted behind, the front angles bluntly, the hind angles acutely, produced and the base deeply impressed transversely. The elytra are rather finely punctate-striate, gently dilated to a little behind the shoulders and strongly narrowed from there to the extremities, which are thickened and separately rounded. Joints 1 to 8 of the antenna are elongate, 9 and 10 hemispherical and 11 spherical.

♂. The front legs are very long and slender, the femora bear numerous minute tubercles in two or three irregular rows and the three basal joints of the tarsus are elongate. The basal joint of the antennal club is excised on one side in this sex.

Length, 4–5 mm.; *breadth*, 1–1.5 mm.

CEYLON: Dikoya, Bogawantalawa, 3800–5200 ft. (*G. Lewis*, Dec., March).

Type of *rufipes* probably lost; that of *pura* in the British Museum and that of *trifoliata* in M. René Oberthür's collection. This is probably Motschulsky's species, but his description is not sufficient to make such a conclusion certain.

239. *Cladoxena flaviclavata*, sp. nov.

Reddish- or brownish-testaceous, with a golden-green lustre, the head, the anterior part of the pronotum, the apical part of the elytra, and the middle and hind femora, except at their extremities, paler in colour, the antennæ dark brown, with the basal joint paler and the club bright orange.

Not very elongate, very smooth and shining, with the antennal club broad and rather compact. The head is moderately punctured, with the eyes far apart and not prominent. The pronotum

is very convex, finely and sparsely punctured, with a few much larger punctures near the base, which is broadly margined. The scutellum is slightly transverse, contracted at the base and very obtusely angulate behind. The elytra are very finely and not closely punctured in regular rows, dilating considerably behind the shoulders, which are not very well-marked, and tapering rapidly to the extremities, which are almost conjointly rounded, the sutural angle being only a little blunted. The prosternum is coarsely punctured beneath, the metasternum coarsely at the sides and finely in the middle and the abdomen very minutely and sparsely, the basal sternite bearing short elevated lines rather far apart.

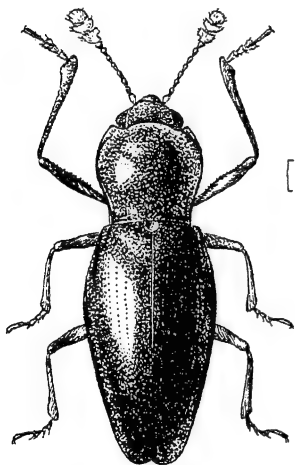


Fig. 49. — *Cladoxena flaviclavata*.

Length, 3.5–4.5 mm.; breadth, 1 mm.

CEYLON: Kitulgalle, 1700 ft. (*G. Lewis*, Jan.); Kandy (*G. E. Bryant*, July).

Type in the British Museum.

I have seen only one example of each sex, the male found by Mr. Lewis in 1882 and the female by Mr. Bryant in 1908. The species is easily recognized by the large pale club of the antenna and the very feebly punctured elytra.

Joints 2 to 6 of the antenna are slightly elongate, 7 about as long as it is wide, 8 a little transverse, 9 and 10 strongly transverse and subsemicircular, 11 a little wider than it is long.

♂. Rather more elongate than the female; with the legs (especially the front pair) and antennæ more slender. The prothorax is about as long as it is wide and the elytra are more produced behind. The 9th joint of the antenna has a deep excision on one side, and the angles formed by the excision are sharp. The front femur bears two rows of minute tubercles along its anterior edge and the front tarsus is long and narrow.

♀. The pronotum is distinctly transverse and the elytra are short. The front tarsus is rather broad.

ENDOMYCHIDÆ.

As already mentioned, the obvious resemblance which exists between many of the most conspicuous representatives of the two families, ENDOMYCHIDÆ and EROTYLIDÆ, must be attributed in part to a superficial convergence, both groups being remarkable for a high development of Aposematic (or Warning) Coloration and showing, especially in the Oriental Region, striking similarities of colour and pattern. These, to some extent, mask the actual dissimilarity of anatomical detail.

Structure.

The regular elongate-oval shape characteristic of the EROTYLIDÆ is rarely found amongst the ENDOMYCHIDÆ, which as a whole have a much shorter and broader form. An almost circular or very shortly oval outline is common, or a short and broad hinder portion may be combined with a conspicuously narrower anterior part, so that the shoulders of the elytra stand out very prominently.

Legs.—Although there are forms with moderately short legs, as a rule the latter are long, slender and very freely articulated. The cavities for the front coxæ (see fig. 1 c, p. 1) are not closed behind, as in the EROTYLIDÆ, and the two coxæ may be in contact (as in *Ancylopus*), although the prosternum almost always forms a conspicuous process between and behind them. The trochanters are well-developed, generally completely separating the coxæ and femora. In some genera (e.g. *Saula*) they are elongate and add considerably to the length of the legs, but in some short-legged forms, as in *Cyclotoma*, the coxa and femur are in immediate contact. In many genera the femora are club-shaped, being drawn out into a narrow footstalk at the base and rather bulbous near the extremity. The tibiæ are nearly always very slender except in the males of certain species, in which occur strange dilatations or distortions. The most important difference between the ENDOMYCHIDÆ and EROTYLIDÆ is that in the number of joints composing the foot, the EROTYLIDÆ having five (sometimes apparently four), while in the ENDOMYCHIDÆ there are normally four joints, of which the penultimate one is very much reduced so that there are apparently only three. In this, as in many other structural details, there is a close similarity to the COCCINELLIDÆ (which, with the ENDOMYCHIDÆ, are sometimes called Pseudotrimeræ from the tarsal structure), and many of the round-bodied forms of the present family have so close a resemblance to COCCINELLIDÆ that, unless the antennæ are exposed, they are almost inevitably mistaken for them.

Antennæ.—Examination of the antennæ will enable such doubtful forms to be distinguished immediately, for these organs are always of very small size in the COCCINELLIDÆ, whereas their high

degree of development is one of the chief distinctive features of the ENDOMYCHIDÆ. The antennæ also present a great variety of different forms, and are of considerable importance for the purpose of classification. They may even show marked difference in species closely related. Although almost invariably composed of eleven joints, there are only ten in *Endocælus* and nine in the American genus *Bystus*, while in a few very remarkable genera, represented by *Trochoideus*, all but the basal joints have become consolidated, so that only three or four separate articulations can be counted. The three joints normally composing the club are nearly always clearly differentiated from the rest and sometimes very abruptly, but occasionally (as in *Mycetina*) the footstalk may gradually thicken so that the transition becomes rather indistinct. The club may be extremely flat, in which case the component joints are closely and immovably united together, as in *Eumorphus*, *Amphisternus*, *Spathomeles* and *Eucteanus*, some species of which exhibit very graceful and striking forms of antenna; or it may be only slightly or scarcely at all flattened, and in such cases the three joints composing it are extremely loosely connected, as in *Ectomychus*, *Saula* and *Danaë*, amongst which also curious and remarkable forms occur. The 1st joint of the antenna is always rather large and club-shaped, the 2nd is rather short and the 3rd frequently long. Generally there is a regular diminution in length from the 4th to the 8th, an abrupt increase then marking the club, but in some peculiar species (*Danaë clauda*, *D. ciliatipes*, etc.) the whole eleven joints are alternately long and short. In *Danaë* and *Pseudindalmus* a very peculiar feature is the curiously swollen 9th joint distinctive of the male sex. The antennæ are attached close to the inner margins of the eyes, so that they are rather near together at the base, the head being narrowed at that point.

Eyes.—The eyes are composed of rather large and highly convex facets and generally extend in narrow masses from the upper to the lower surface of the head, sometimes being further narrowed near the middle of their front margins by the intrusion of the antennal sockets.

Vocal Organs.—Exactly as in the EROTYLIDÆ, stridulation is performed by friction between the head and pronotum as well as between the wings and elytra. The two types of organ, entirely different one from the other, are both very constant, and the former type distinguishes a large and important section of the family, to which it is restricted, viz. the EUMORPHINI. This is perhaps the most highly-developed section and is further distinguished by the almost invariable occurrence of external sexual differences.

The existence of the stridulatory organs was unknown to Gerstaecker, whose Monograph upon the ENDOMYCHIDÆ was published in 1858, and Gorham, who first detected the apparatus upon the head of two species belonging to the genera *Encymon* and *Phæomychus*, believed them to be peculiar to the male sex and

isolated in their occurrence. It was pointed out by Dr. C. J. Gahan in 1906 that they are alike in both sexes and common to groups of genera. This apparatus differs only in minor details from that found in the same situation in the EROTYLIDÆ and LANGURIIDÆ, as well as in certain HISPINÆ and NITIDULIDÆ, in all of which the sound is produced by drawing the head in and out of the thoracic cavity in such a way as to press the upper surface of the occipital region against a sharp edge within the cavity. In order to see the structure properly, it is necessary to draw the head of a dead specimen out of the cavity, for in the ordinary position the essential parts are concealed. If the head is removed, for example in any specimen of *Eumorphus*, *Amphisternus* or *Beccaria*, it will be seen under a fairly high power of the microscope that an elliptical area extending from behind the eyes to the posterior margin consists of a large number of extremely fine and close transverse straight ridges (see fig. 50, *d*). Even when not examined under a sufficiently high power to be clearly seen, the presence of these ridges is revealed by the play of iridescent colours over the area covered by them. A careful examination of the interior of the prothoracic collar will show in the middle of its anterior part a sharply bent-down scraper. Throughout the genera which I refer to the EUMORPHINI, although neither the ridged plate upon the occiput nor the scraper within the thoracic cavity is easily visible, their presence is indicated by an external modification of the front margin of the pronotum to which I have given the name of "stridulatory membrane." The anterior edge is not simply turned inwards, as in *Beccaria*, but is extended in the middle as a rather thin translucent membranous flange, which invariably has a slight pit or impression in the middle. This flange sometimes fills a notch or emargination in the chitinous part of the pronotum, and usually projects a little in advance of the general line. Possibly this flexible membrane serves as a drum to increase the volume of sound produced.

Although provided with so perfect a means of sound production, most, if not all, of the EUMORPHINI, as well as other genera in which the head apparatus is absent (*Amphix*, *Epipocus*, etc.), have a second organ operated by rubbing together the wings and elytra. All the ENDOMYCHIDÆ, so far as is known, have the power of flight. Not only are their wings voluminous in proportion to the size of the body, but they are actually longer relatively to their breadth, even in species of very short bodily form, than the wings of the generally long-bodied EROTYLIDÆ and fully as long as those of the very elongate LANGURIIDÆ. This necessitates their being much more compactly folded when not in use, and we accordingly find the transverse fold situated very much nearer the base of the wing than in the other two families, in which it is not very far distant from the tip. To facilitate the doubling of the wing the rigid framework of veins is practically confined to the basal half: and the Median or Recurrent Vein which, in the two just-mentioned families, as in a very large part of the Coleoptera, extends through-

out the greater part of the wing, is in the ENDOMYCHIDÆ bent downwards just before reaching the middle, so that the wing is divided rather abruptly into two well-marked halves, the outer half being almost entirely devoid of veins. Upon the proximal half and at the point which in the folded wing reaches the end and lies in the middle line of the body (see fig. 50, *a*, *b*) there is a stiffened and darkly pigmented area, upon each side of a vein which runs close to the hind margin of the wing. This dark patch is rather rectangular in shape and appears to have exactly the same scaly nature as the corresponding oval area already described as occurring in the EROTYLIDÆ. Beneath each elytron at the point in contact

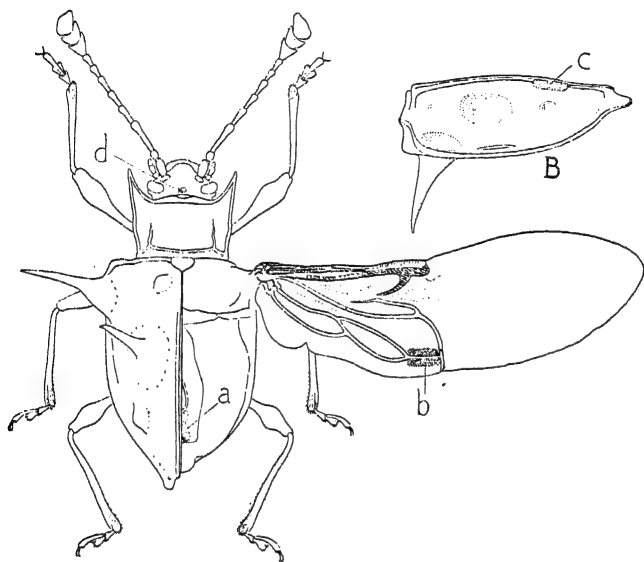


Fig. 50.—*Amphisternus* sp., with the right elytron, B, removed to show the stridulatory areas at *a*, *b*, and *c*. The cephalic stridulatory area is also seen at *d*.

with the wing-patch (that is, a little before the tip and just within the sutural margin) is a dull area, as in the EROTYLIDÆ, exactly placed to serve as a rasp in conjunction with the wing-patch (see fig. 50 B, *c*). I have found this apparatus in the genera *Eumorphus*, *Amphisternus*, *Cymbachus*, *Spathomeles*, *Amphix* and *Epipocus*, and it no doubt exists in many others.

Organs of the Mouth.—The labrum forms a well-developed membranous flap continuous with the clypeus and covering the mouth above. The mandibles undergo much greater changes of form than might have been expected from the apparent uniformity of the insects' feeding habits. Evidently there are considerable differences in the texture of the substances, whether fungus or

otherwise, with which these organs have to deal. The mandible of *Spathomeles* and *Engonius* is very stout and armed with one or two strong terminal teeth, but in most genera it is rather thin and translucent, the extremity produced into a fine point and often with a second less acute tooth beneath. In *Eumorphus* the tip forms a long chisel-shaped process. In *Pedanus* there is no tip, the mandible consisting only of a thin lamina of rounded outline. In *Trochoideus* the terminal part bears three teeth, and still more occur in some other genera. The inner edge of the mandible is always membranous, and there is a very hard, finely-ridged molar or grinding area at the base, where the two mandibles rub one against the other. The maxilla has two hairy lobes, fringed at the ends, the inner one rather slender and shorter than the outer, which is generally broad at the end. The 4-jointed palpus is stout, with an elongate, more or less pointed, terminal joint. The labium is more subject to variation in form than any other of the mouth-appendages. There is a strongly-chitinized basal piece or mentum, which is naked, more or less transverse, sometimes straight in front and sometimes angular, and to this is attached by a membranous connective portion the much less chitinous ligular part, which is generally bilobed and in all the most representative genera is produced laterally into narrow wings. The labial palpi in these forms are extremely short and compactly articulated, with the terminal joint cup-shaped and hollowed at the end. In *Endomychus*, *Eucteanus* and the genera immediately related to them the labium is reduced, scarcely or not at all bilobed, and not produced laterally, and the labial palpi are of normal form, that is, less compact, with the joints elongate and the terminal one more or less pointed at the end. The two labial palpi are generally situated very close together, but in *Saula* and genera allied to it there is a rather wide interval between them.

Thorax.—The conformation of the prothorax, both above and beneath, is highly distinctive of the ENDOMYCHIDÆ. I have already described the stridulatory membrane, which is a distinctive feature of an important section of the family. Broad, flat, lateral margins, separated from the middle region by deep channels, are characteristic of another group, and a deep but narrow basal channel occurs in most of the species. These channels seem to be related to a less conspicuous but evidently very important feature of practically invariable occurrence throughout the family, to which so little attention has been paid hitherto that no name has been given to it. I apply the term *basal* or *lateral fovea* to a peculiar orifice found just within the base of the pronotum and at a little distance from each side. A similar pair of orifices occurs in other related families of beetles, but they appear to attain a higher development and to be of more general occurrence in the ENDOMYCHIDÆ than in any other family. I have already referred to them in the LANGURIIDÆ, in which family they are nearly always present but do not appear in so developed a form as in the ENDOMYCHIDÆ. In a few other families certain genera occur in

which structures apparently similar can be seen, e.g. *Holoparamecus* in the LATHRIDIDÆ, and *Pselaphocerus* in the PSELAPHIDÆ*.

In the Monograph of the ENDOMYCHIDÆ, Gerstaecker refers to these structures only as furrows dividing the pronotum into different regions. They have really the form of funnel-like pits, more or less triangular at the mouth owing to the convergence of three channels, one forming a forward continuation of the pit upon the disc of the thorax and rarely reaching past the middle (this, with the pit, forms the "fovea"), one extending towards the hind angle of the thorax and the third uniting the pit with that on the opposite side and forming the basal groove. This is not continuous from edge to edge of the thorax, a slight angle being always found where the junction with the fovea occurs. The basal groove generally follows closely the curvature of the hind margin of the pronotum, but sometimes, as in *Stenotarsus dentipes*, joins the two foveæ in a straight line, cutting off a wide marginal strip; or it may be absent altogether, in which case a small projecting flap always intervenes between the orifice and the actual edge. In *Ancylopus melanocephalus* the two foveæ are united in the female by an additional groove, crossing the pronotum transversely about the middle, and absent in the male. In *Eexysma* the foveæ are produced to the front margin. Sometimes the basal margin is notched at the point adjoining the fovea, or a channel may pass outwards beneath the lateral margin, as in *Stenotarsus dentipes*. Internally the funnel opens within the fold formed by the doubled-back hind margin of the prothorax. At the sides the inturned part becomes much wider and encloses a considerable space, and examination of dried specimens reveals a kind of spongy mass just within this space, into which the passage leads. It seems probable that secretory glands are present here in the living insect.

That these organs are important seems certain, but their function can only be guessed in the absence of any observations throwing light upon it. Secretory glands opening upon the pronotum are found in other beetles. In *Dytiscus* and related genera a pair of glands opening just beneath the front margin emit an oily whitish fluid with a pungent odour and bitter poisonous properties, and a similar fluid has been noticed in the channels upon the pronotum of certain HISTERIDÆ. It seems not impossible that the strong odour and almost certainly unpalatable qualities of the ENDOMYCHIDÆ are connected with a secretion

* [The Seychellean genus and species of COLYDIDÆ, *Axiocerylon caricolle*, Grouvelle, has a deep transverse furrow and very deep lateral pits on the prothorax, while deep cavities are also present on the prothorax of another Colydiid from the Seychelles, *Thyroderus sculpticollis*, Grouvelle: see Trans. Ent. Soc. London, 1918, pp 41-47, pl. ii, figs. 12, 13. In the former insect especially the thoracic pits are of such depth as to arouse the suspicion that they must have some special function, such as secretion of a substance liked by ants; but the beetles were found in decaying vegetable matter, not in company with ants.—EDS.]

emitted from the thoracic foveæ, but, if so, it should be possible to ascertain the fact without much difficulty. Other Coleoptera (many species of *Paussus* and probably the genus *Cremastochilus* in the CETONINÆ) emit from paired orifices in the prothorax an agreeable secretion which renders them specially attractive to Ants, in whose nests they are privileged guests, and a few peculiar ENDOMYCHIDÆ probably also live as inmates in the nests of Ants.

The mesonotum, or scutellum, is small and short, generally a little contracted at the base, broader than it is long and blunt behind.

Elytra.—The elytra always cover the abdomen and have well-developed epipleuræ at the sides. Very frequently the external edges are narrowly flattened or reflexed, and in some of the species of the genus *Eumorphus* (e. g., *E. marginatus*, F., fig. 53, p. 297) these outer margins are very remarkably dilated, the significance of which is unknown.

Wings.—The wing-membrane is almost colourless, not deeply tinted, as in LANGURIIDÆ and some EROTYLIDÆ. As already mentioned, the wing is divided rather abruptly into two well-marked halves, the outer half almost devoid of veins. In this wing-structure, as in most other anatomical features, there is a close relationship to the COCCINELLIDÆ, but in the latter conspicuous veins are developed in the outer half of the wing. The COCCINELLIDÆ are characterized by an extreme shortness of body, rendering necessary a close folding of the wings when not in use. In the ENDOMYCHIDÆ both very short and moderately long forms occur and, since the wing-structure, apparently acquired as an adaptation to the short Coccinelloid body-form, is common to all, it is probably correct to conclude that the short form is the ancestral one and the elongate type more recent.

Sternum.—The front legs are generally rather more approximated in the ENDOMYCHIDÆ than in the EROTYLIDÆ, whilst the two hinder pairs are farther apart. The front coxæ are almost always separated by a prosternal process which projects behind them but does not meet the episterna, so that the coxal cavities (fig. 1 C, p. 1) are not closed behind as they are in the EROTYLIDÆ. The mesosternum meets the prosternal process instead of sliding beneath it, or it may be hollowed out to receive the rounded end of the process, as in the genus *Stenotarsus* and those related to it. The metasternum generally meets the mesosternum in a straight or rounded suture and may have a raised anterior margin, but its posterior margin usually shows between the widely-separated hind coxæ a narrow projecting flange separated by a well-marked groove, most commonly running straight across from one coxal cavity to the other, but sometimes forming a sharp angle (*Eumorphus* and *Engonius*). This flange may be cleft in the middle, as in *Eumorphus*, *Encymon* and other genera, forming two angular lobes. I describe later a very remarkable development of these lobes found in the males of one species, *Pedanus quadrilunatus*, and

represented in fig. 57 *a*, p. 321. The metasternal flange is best developed in the EUMORPHINI, but does not occur in *Mycetina*. In the other Divisions of the family it is generally traceable, although less distinct than in the EUMORPHINI.

Abdomen.—The base of the abdomen shows a flange between the hind coxæ, which is not always very closely correlated with the hinder margin of the metasternum and is sometimes found to be capable of rather wide separation from it, revealing a deep pocket, the opening into which is overhung by the lobes, just referred to, at the posterior edge of the metasternum. Five abdominal sternites are normally visible beneath, but a sixth is occasionally extruded. The basal sternite is relatively very large, generally as long as the three following sternites together. When the abdomen is detached, part of another sternite anterior to the first ordinarily visible comes into view and, according to Verhoeff (*Zoologischer Anzeiger*, 1916, p. 282), this corresponds to the primitive second segment, the first having practically disappeared. If this is so, the sternites visible in their entirety correspond to the 3rd, 4th, 5th, 6th and 7th. The terminal sternite is generally rounded at its hind margin, but in many EUMORPHINÆ it is notched or excised and presents various peculiarities differing according to the sex.

Genitalia.—As might be supposed in insects whose eggs are deposited without any provision for concealment, the female has no chitinous protrusible ovipositor, in marked contrast to that of the LANGURIIDÆ. The male ædeagus on the other hand has a long chitinous tubular lobe of asymmetrical shape, terminating in a long spinous process, sometimes branched at the base, the orifice being situated at the side and near the base of the spinous process. The tubular median lobe slides through a small annular sheath, or tegmen, of irregular shape.

Sexual Dimorphism.

There are no external features by which it is possible to ascertain the sex of individuals throughout the family, and in many, especially amongst the small-bodied species, male and female are alike. Probably, however, there are few groups of insects of similar extent in which secondary sexual characters can be found in such various and remarkable forms. Such features are of great importance in the discrimination of species, being particularly liable to assume a different phase in each. For this reason, and not only because they are peculiar to one sex, they are not suitable for distinguishing genera. It is often the case that a feature found in males of the larger, more vigorous species of a genus is unrepresented in smaller but closely-related species; and in other cases distinctively male characters are strangely erratic in their nature, appearing in totally different forms and in different regions of the body in species otherwise very closely related.

The most prevalent external feature distinctive of the male sex of the ENDOMYCHIDÆ is an oblique spine or tooth at the inner

edge of the tibia, most commonly in the front legs. It may be a very fine and delicate spine or a stout process tufted at the end. The tibia frequently appears as if hollowed out immediately beyond it, and is sometimes greatly distorted so that a large hollowed space is formed behind the tooth, as in *Eumorphus tetraspilotus* (Plate I, fig. 2). Tibial spines may be found upon the front tibiæ only, less frequently upon the front and middle pairs and rarely upon all three pairs. In *Spathomeles* not only does each tibia bear a tooth, but the front femora and the hind trochanters may be toothed also. In certain of the minute species constituting the genera *Saula* and *Danaë* somewhat similar outgrowths appear upon the hind tibiæ of the males, in others either the front or the hind tibia is dilated, producing a curious shovel-like form, or the hind tibia may bear a fringe of closely-set hairs along its inner edge.

In other groups of insects the antennæ, as the organs chiefly employed in mutual recognition, are particularly susceptible of modification in the male, but these organs, perhaps because an exceptionally high development is almost general in the family, show very little differentiation according to sex in the ENDOMYCHIDÆ. A marked exception is the genus *Trochoideus* (and a few others) in which the antenna beyond the first two or three joints is consolidated into a massive club which is much larger in the male than the female. A few Malayan species of *Saula* also show peculiar modifications of the antennæ in this sex, and a remarkable modification is found in the genera *Danaë* and *Pseudindalmus*, consisting in a bulb-like enlargement of the 9th joint.

In the abundant and cosmopolitan *Ancylopus melanocephalus* the most marked features are found in the female, which, besides the transverse discoidal furrow joining the two thoracic foveæ, to which I have already referred, has a shallow oblique channel upon each elytron, not present in the male.

In certain species of *Eumorphus* the males have the elytra very smooth and glossy, while in the females they are rather dull, the converse condition to that of some EROTYLIDÆ, which show dull areas upon the elytra of the males. A more curious phenomenon is the appearance of humps or hooks upon the elytra of the males. Perhaps the most striking examples are certain species of *Eumorphus*, in which the conjoined elytra are elevated in the middle so that they assume the shape of a pyramid (*Eumorphus marginatus* (fig. 53, p. 297), *dilatatus*, etc.). An equally strange case is that of *Spathomeles decoratus* (fig. 54, p. 309), the male sex of which has a remarkable hooked spine, directed backwards, on each side of the elytral suture.

In the genus *Eumorphus* the females have the extremities of the elytra a little produced, while those of the males are shorter. On the other hand, in the minute insects forming the genus *Asymbius* the extremities are produced into pointed spine-like processes in what I believe to be the males and I have described the same phenomenon in the Seychellean genus *Cyrtomychus*.

In *Eumorphus austerus* and other species the hind angles of the thorax are produced in the males into strange sinuous spines, as though to protect the shoulders of the elytra, and in *Stenotarsus vallatus* the lateral grooves of the pronotum are more deeply hollowed in the males than in the females.

Curious structures distinctive of one sex appear also upon the lower surface of the body. One of the most remarkable is that of the male of *Pedanus quadrilunatus* (fig. 57, p. 321). A pair of long flattened horizontal processes extends backwards from the posterior margin of the metasternum between the hind legs, the ends curving round the base of each leg and possibly affording support to the latter. In many EUMORPHINI the hind margin of the abdomen is notched or excised in the middle in the male alone, or in a different form in each sex, and in *Engonius* and other genera curiously shaped excrescences upon the last sternite distinguish the male sex. Finally, in the genus *Eucteanus* half the species, all of which are confined to the Indian region, have the abdomen of the male deeply hollowed along the middle, and the edges of the excavation elevated into sharp crests. In the remaining half no trace of this striking feature can be found, and the two sexes are exactly alike externally.

The whole of these very various secondary sexual features must be regarded as without known significance in the present scanty state of our knowledge.

Key to the Subfamilies of ENDOMYCHIDÆ.

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|--|-----------------------|
| 3rd (penultimate) joint of the tarsi minute,
nodiform | ENDOMYCHINÆ, p. 277. |
| 3rd joint of the tarsi not minute or nodiform. | |
| Antennæ 4- or 5-jointed | TROCHOIDEINÆ, p. 401. |
| Antennæ 10- or 11-jointed | MYCETÆINÆ, p. 396. |

Subfamily ENDOMYCHINÆ.

This subfamily embraces the vast majority of the ENDOMYCHIDÆ of the world, including the whole of the large and brightly-coloured species. Its members differ greatly in outward appearance, but all agree closely in the structure of the feet. There are four tarsal joints, of which the first two are rather short and flat, the 3rd very minute, attached to the upper surface of the 2nd not far from its base and closely united with the slender 4th joint, of which it forms merely a slight swelling at the base.

The antennæ, which consist of a variable number of joints in the other subfamilies, are here invariably composed of eleven, but have otherwise little uniformity. They are usually slender, but in some species of *Mycetina* are short and very stout.

Key to the Divisions of ENDOMYCHINÆ.

- Front margin of the pronotum provided with a stridulatory membrane **Eumorphini**, p. 278.
- Front margin of the pronotum without a stridulatory membrane.
- Prosternum not produced behind **Beccariini**, p. 345.
- Prosternum produced behind.
- Without hairy clothing above, usually not unicolorous; ligula elongate..... **Endomychini**, p. 348.
- Body entirely hairy (except in *Atrichonota*), usually unicolorous; ligula transverse, produced laterally **Stenotarsini**, p. 362.

Division EUMORPHINI.

The members of this group, which contains, with a few exceptions, all the largest and most beautiful species of ENDOMYCHIDÆ, are easily distinguished by a single common feature—the possession of a stridulatory apparatus operated by the movements of the head. The essential parts of the apparatus are not visible in the normal position of the head, but, when this is drawn forward so that the part behind the eyes is well exposed, a slightly iridescent area may be seen. The iridescence is due to the play of light upon a series of microscopic transverse ridges so placed as to be capable of being rubbed against a single ridge situated beneath the front margin of the pronotum. Although not usually exposed to view, the existence of the organ is always indicated by a small patch of thin translucent membrane, more or less transversely oval in shape, forming a very slight projection in the middle of the front edge of the pronotum. The function of this part of the apparatus is unknown, and the character of the sound produced and the manner of its production do not appear to have yet been observed in any species.

In addition to the possession of the stridulatory apparatus, the existence of which was unknown to those who have previously attempted the classification of the family, the structure of the labium is very characteristic, and especially that of the labial palpi. The ligula is drawn out on each side into a narrow lateral process, while the palpi are placed close together at the middle of the organ and are not the usual mobile and more or less slender structures, but very short and stout and apparently capable of little movement. Each of the three joints has a diameter about equal to its length, and the last is hollowed out and cup-shaped (the genus *Dapsa* is an exception in this respect). The mandibles show a remarkable diversity of forms in this group, and are important for the discrimination of the genera. In the predominant genus *Eumorphus* they are produced at the tip into a long chisel-edged tooth. *Engonius* and *Spathomeles* have them very short and stout, the former with two, and the latter with one strong terminal tooth. In *Pedanus* they are completely rounded and not pointed or toothed.

Key to the Genera of EUMORPHINI.

- 1 (24) 3rd joint of the antenna much longer than the 2nd or 4th.
- 2 (19) Front coxæ distinctly separated.
- 3 (6) Prosternal process bifurcate behind.
- 4 (5) Front angles of the pronotum not very prominent, femora not clavate CYMBACHUS, Gerst., p. 280.
- 5 (4) Front angles of the pronotum very prominent and femora clavate.
- 6 (3) Prosternal process not bifurcate behind. AMPHISTERNUS, Germ., [p. 282.
- 7 (10) Mesosternum broadly transverse.
- 8 (9) Elytra inflated at the shoulders.. STICTOMELA, Gorb., p. 288.
- 9 (8) Elytra not inflated at the shoulders..... BRACHYTRYCHERUS, [Arrow, p. 291.
- 10 (7) Mesosternum narrow, not transverse. [p. 294.
- 11 (12) Posterior marginal groove of the metasternum sharply angulate. EUMORPHUS, Weber,
- 12 (11) Posterior marginal groove of the metasternum straight or nearly straight.
- 13 (14) Club of the antenna with the joints close and immovable.... [p. 307.
- 14 (13) Club of the antenna with the joints not close and immovable. SPATHOMELES, Gerst.,
- 15 (18) Club of the antenna not very narrow or loosely-articulated.
- 16 (17) Mandible sharp-pointed; prothorax not very narrow at the base ..
- 17 (16) Mandible rounded, without tip; prothorax rather narrow at the base ENGONIUS, Gerst., p. 310.
- 18 (15) Club of the antenna very narrow and loosely-articulated PEDANUS, Gerst., p. 319.
- 19 (2) Front coxæ not, or very little, separated. INDALMUS, Gerst., p. 323.
- 20 (23) Middle coxæ not closely approximate.
- 21 (22) Antennæ with a moderately broad club ENCYMON, Gerst., p. 330.
- 22 (21) Antennæ with the club very narrow [p. 333.
- 23 (20) Middle coxæ closely approximate. ANCYLOPUS, Costa,
- 24 (1) 3rd joint of the antenna not much longer than the 2nd or 4th. DAPSA, Latr., p. 335.
- 25 (26) Antennæ with well-defined club. [p. 338.
- 26 (25) Club of the antenna not well-defined PSEUDINDALMUS, Arrow,
- MYCETINA, Muls., p. 340.

Genus **CYMBACHUS.**

Cymbachus, Gerst., Archiv f. Naturg. xxiii, 1857, 1, p. 233; id., Mon. Endom. 1858, p. 140.

TYPE, *Cymbachus pulchellus*, Gerst. (Java).

Range. Java, Burma and Indo-China.

Broadly oval and convex, smooth and shining above, with slender legs and antennæ, the last three joints of the latter forming a rather broad club, of which the last two joints are transverse, the 2nd short and the remainder elongate, the 3rd nearly as long as the 4th and 5th together. The eyes are strongly transverse and moderately prominent. The labrum is broad and prominent. The mandible is produced at the tip into a long chisel-edged tooth, with an acute compressed tooth at its base. The outer lobe of the maxilla is not dilated at the end, and the inner lobe is very slender. The maxillary palpus is stout and its terminal joint pointed. Mentum short and rectangular; ligula straight in front, with short lateral processes; palpi close together at the base, stout, with the last joint oval, not excavated. The pronotum is short, rather broad at the base and strongly narrowing anteriorly with a prominent stridulatory membrane in front, all the angles a little produced, the base finely margined and the lateral foveæ deep but minute. The scutellum is triangular and not broader than it is long. The elytra are short, highly convex and strongly rounded at the sides. The front coxæ are distinctly but not widely separated, and the prosternum is scarcely produced behind them, but distinctly bifid at the end. The mesosternum is short, transversely pentagonal, with a short but sharp anterior process. The metasternum has a narrow elevated anterior margin. The abdomen has five visible segments beneath, the first not as long as the three succeeding together. The trochanters are rather large, the femora slender at the base and not much swollen beyond it, the tibiæ slender and straight and the tarsi moderately broadly lobed.

The sexes are similar. No conspicuous differences seem to occur in the legs, but in the only species of which the male is known the front trochanters are spinose and the first abdominal segment has a triangular impression at its hinder edge.

The genus is a rather enigmatical one. Although the occurrence of the stridulatory organ and the elongate 3rd joint of the antenna associate it with the *EUMORPHINI*, and the bifurcate prosternal process seems to indicate relationship with *Amphisternus*, the organs of the mouth are not of the type distinctive of that group. The ligula, though transverse, is scarcely produced laterally, and the labial palpi have the terminal joint elongate. These features, as well as the absence of any difference in the legs of male and female, render it probable that the similarity in the form of the sternal process to that of *Amphisternus* is due to convergence rather than affinity.

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Key to the Species of CYMBACHUS.

Elytra yellow, with blue spots	<i>formosus</i> , Gorch.
Elytra blue, with yellow spots	<i>spilotus</i> , sp. n.

240. *Cymbachus formosus*.

Cymbachus formosus, Gorch.,* Proc. Zool. Soc. Lond. 1897, p. 460,
 pl. xxxii, fig. 1.

Dark shining steely blue or blue-green, with the elytra pale yellow, except the extreme edges, and upon each a large oval median patch adjoining the suture, a smaller one opposite the last, adjoining the outer margin, a narrow border adjoining the scutellum, an oval patch at the shoulder and another at the apex. These markings are of the same metallic blue or green as the remaining surface.

Oval in shape, highly convex and compact, with slender legs and antennæ. The antennæ are more than half the length of the body, and all the joints are elongate except the 2nd, 10th and 11th; the 3rd is nearly as long as the 4th and 5th together, and the three last form a rather broad club. The head is deeply sunk in the prothorax, with moderately prominent transverse eyes. The pronotum is broadly transverse, with rather irregular scattered punctures, stronger at the sides and in the hind angles; the sides are feebly bisinuate, with the angles moderately sharp, the front ones a little produced, the hind ones strongly produced and divergent, the base broad, gently rounded in the middle and finely margined, and the lateral foveæ short but deeply impressed. The scutellum is triangular and as long as its breadth at the base. The elytra are strongly, evenly and moderately closely punctured, with the shoulders tumid but not prominent, the sides strongly rounded, widest in the middle, and bluntly rounded apical angles. The metasternum and abdomen beneath are rather strongly punctured and scantily clothed with minute setæ.

The male is unknown.

Length, 6 mm.; *breadth*, 4·5 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

Only a single specimen is known.

241. *Cymbachus spilotus*, sp. nov. (Pl. I, fig. 1.)

Blue-black, with the elytra purple and each decorated with two pale yellow, transversely oval spots, the first just behind the shoulder and almost touching the outer margin, the second between the middle and the apex and only a little removed from the outer margin.

Broadly ovate in shape, very convex and moderately shining. The head is very finely punctured and the eyes are rather large.

The pronotum is similarly punctured upon its anterior half, more strongly behind; its sides are very feebly bisinuate, all the angles strongly produced, the front ones rather blunt, the hind ones acute, the base finely margined and the foveæ fine, short and inconspicuous. The scutellum is very minutely punctured. The elytra are strongly, closely and evenly punctured, except upon the four yellow spots, where the punctures are finer and less close; the reflexed margins are narrow and the apices rounded and not produced. The lower surface is closely and finely punctured and clothed with a fine sparse pubescence. The antennæ are long, but the club is rather short and broad, all its three joints being strongly transverse.

Length, 7 mm.; *breadth*, 4.5 mm.

Sikkim: Gopaldhara, Rungbong Valley (*H. Stevens*).

Type in the British Museum.

This beautiful insect, only a single specimen of which is known, bears a rather close relationship to *C. elegans*, Arrow, from Indo-China, but is more closely punctured and less glossy and the four pale spots are smaller. It is more elongate and less convex than *C. formosus*. There is a considerable resemblance in colour, pattern and general appearance to *Eucteanus marseuli*, Gorh.

Genus **AMPHISTERNUS**.

Amphisternus, Germar, Ersch & Gruber's Allgem. Encycl. Wiss. xxxix, 1843, p. 85; Gerst., Mon. Endom. 1858, p. 44.

TYPE, *Amphisternus tuberculatus*, Germ.

Range. The Malayan Region and as far as Assam.

Generally of moderately elongate form, with slender legs and antennæ, the elytra usually bearing smooth elevations, produced in many species into long spines. The posterior angles of the elytra and the front angles of the thorax may also be produced into similar spines.

Head deeply sunk in the prothorax, with small coarsely-facettèd eyes, the occiput bearing a very finely striated stridulatory area. Prothorax rather narrow at the base, with the front angles very prominent and the stridulatory membrane at the anterior edge conspicuous. Scutellum transverse. Elytra very convex, with the shoulders prominent and the outer margins very narrowly flattened. Prosternum narrow between the front coxæ, produced behind them and forked at the extremity. Mesosternum short and transverse, forming a blunt angle in front. Metasternum with its anterior margin elevated. Femora strongly clubbed, very slender at the base. Tibiæ long and slender. Tarsi not long or broad. Antennæ long and slender, with the 3rd joint much longer than those adjoining, the last three forming a flat and usually narrow club. Mandible short and stout, with the tip acutely bifid. Maxilla with the two membranous lobes long and nearly equal; palpus stout, with the last joint fusiform, truncate

at the tip. Ligula broad, nearly straight at the front margin with the palpi very short and compact.

The male is distinguished by the possession of a tooth at the inner margin of the front femur, and sometimes also by processes upon the last ventral segment.

Key to the Species of AMPHISTERNUS.

- | | |
|--|--------------------------------------|
| 1 (8) Body not hairy above. | |
| 2 (5) Sides of the prothorax well rounded,
front angles not thickened. | |
| 3 (4) Each elytron decorated with two spots,
one anterior and one ante-apical .. | <i>tuberculatus</i> , Germ., p. 283. |
| 4 (3) Each elytron decorated with five
spots, two of them being ante-apical. | <i>corallifer</i> , Gerst., p. 284. |
| 5 (2) Sides of the prothorax nearly straight,
the front angles thickened. | |
| 6 (7) Elytra decorated with ragged trans-
verse fasciæ (as well as spots), club
of the antenna small | <i>pustulifer</i> , Gorb., p. 285. |
| 7 (6) Elytra decorated with raised oval
spots, club of the antenna large.... | <i>phyllocerus</i> , Arrow, p. 286. |
| 8 (1) Body clothed with hair above and
beneath | <i>anceps</i> , Gorb., p. 287. |

242. *Amphisternus tuberculatus*.

Amphisternus tuberculatus, Germ., Ersch & Gruber's Allgem. Encycl. Wiss. xxxix, 1843, p. 86; Gerst., Mon. Endom. 1858, p. 49.

Var. *eruptus*, Gorb., Stett. Ent. Zeit. lxii, 1901, p. 196.

Dull black, each elytron decorated with a small, shining, elevated, bright yellow spot, placed near the middle of the anterior half, and a similar but less sharply-elevated spot in the posterior half. There is also a short longitudinal carina of a deep red colour upon each elytron close to the scutellum.

Moderately short and very convex in shape. The pronotum is scarcely punctured, uneven, strongly transverse, narrow at the base, with the sides well rounded in front, the front angles strongly produced but blunt and the hind angles right angles; there are four large rounded elevations placed transversely before the middle, the base is broadly margined and the lateral foveæ are deep. The scutellum is transversely oval and rather shining. The anterior half of the sutural margins of the elytra, as well as the elevated jewel-like spots, are very smooth and shining; the remaining surface is dull and rather strongly punctured, the shoulders are rounded and carinate, the carina ending rather abruptly behind, the sides gently rounded, with well-marked flattened margins, and the apical angles blunt. The lower surface is smooth, the prosternum deeply channelled longitudinally, its points scarcely divergent behind, the mesosternum broad and the metasternum strongly margined in front, with a deep depression on each side just behind the margin. The first ventral segment

is very strongly punctured in the middle. The 3rd joint of the antenna is half as long again as the 4th, and the club is narrow, its first joint about as long as it is wide and the two terminal joints strongly transverse.

♂. There is a strong sharp tooth placed considerably beyond the middle of the front tibia at the inner edge.

Length, 8–9 mm.; *breadth*, 4.5–5 mm.

TENASSERIM: Tavoy (*E. T. Atkinson*). MALAY PENINSULA: Perak (*Doherty*). SUMATRA. JAVA.

Type (?) in the Halle Museum; that of the var. *eruptus* in the Stettin Museum.

The only Indian specimen I have seen (the one from Tavoy mentioned by Gorham in his description of *A. eruptus*) differs from the typical form (from Java) in having rather narrower elytra, the flattened outer margins being less apparent, the humeral carina not tuberculate at its hinder end, and neither that nor the small basal carina has any orange tinge. Specimens taken by Doherty in the Malay Peninsula (Perak) are intermediate, the carinæ being black, but the flattened margins broad. Specimens from Java are generally reddish, instead of black, in colour, but this and the degree of production of the humeral carina, as well as the colour of the basal one, are not constant.

243. *Amphisternus corallifer*.

Amphisternus corallifer. Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 216; id., Mon. Endom. 1858, p. 48, pl. ii, fig. 1.

Dull black, with the basal joint of the antenna and the outer half of each femur blood-red, and each elytron ornamented with five small bright orange spots, one near the scutellum, one a little behind the shoulders, one just before the middle and two placed transversely a little behind the middle. Of these spots the first three form shining elevated tubercles, the post-humeral one projecting outwards beyond the outer margin of the elytron.

Moderately short and convex and very smooth and shining beneath, but rather opaque above. The head is coarsely punctured and a little hollowed between the eyes. The pronotum is less coarsely and closely punctured, rather narrow at the base, with the sides well rounded, the front angles strongly produced but blunt, and the hind angles sharp but not produced; the stridulatory membrane is prominent in front, there are four rounded elevations placed transversely across the middle of the disc, the base is rather broadly margined and the lateral foveæ are deep and parallel. The scutellum is smooth and shining and a little broader than it is long. The elytra are coarsely punctured, except upon the pale spots, the shoulders are carinate and very prominent, the sides parallel in front and gently rounded behind, with narrow flattened margins and the extremities conjointly rounded. The lower surface is very smooth and shining. The prosternal process is rather broad, the mesosternum excavated in front, and the meta-

sternum has a deep pit on each side just behind its elevated front margin. The 3rd joint of the antenna is not quite as long as the 4th and 5th together and the club is very narrow, its first joint elongate and the two terminal ones strongly transverse.

♂. There is a strong acute spine beyond the middle of the inner edge of the front tibia.

Length, 9 mm.; *breadth*, 4.5 mm.

BURMA: Karen Hills, 4000 ft. (*L. Fea*, Feb. to May); Dawna Hills, 2200 ft. (*F. H. Gravely*, Nov.). TENASSERIM (*Helfer*). INDO-CHINA.

Type in the Stettin Museum; co-type in the Berlin Museum.

244. *Amphisternus pustulifer*.

Amphisternus pustulifer, Gorh.,* *Ann. Mus. Civ. Genova*, xxxvi, 1896, p. 291.

Black, not very shining, each elytron decorated with two small elevated spots close to the base, the outer one on the humeral carina, and two ragged transverse fasciæ, placed at a little distance from the suture and reaching almost to the outer margin, the first just before the middle, the second before the apex, and each emitting two tooth-like processes forward and two backward.

Rather elongate in shape and very convex. The head is strongly punctured. The pronotum is opaque but not visibly punctured and has a rounded elevation on each side just within the lateral margins; its sides are nearly straight and parallel, the lateral margins elevated, narrow behind but becoming very broad and thick in front, the front angles very bluntly rounded and strongly produced, the hind angles sharp but not distinctly produced, the base rather broadly margined and the foveæ short. The scutellum is small, shining and transverse. The elytra are moderately strongly but unevenly punctured, with the shoulders rather tumid and prominent, the sides nearly parallel in front and margined behind and the apex tapering. The antennæ are not very long, the 3rd joint not as long as the 4th and 5th together, the club rather narrow, the 9th joint slightly, and the 10th and 11th strongly, transverse. The tibiæ are very slender and slightly curved. The prosternum and mesosternum are deeply hollowed beneath, the latter short and broad, with an anterior process. The metasternum is very smooth and shining, with a deep pit on each side just behind the raised anterior margin. The first ventral segment of the abdomen is rather strongly punctured.

♂. The front tibia has a slight tooth at the middle of its inner edge, and is a little bent and hollowed out from there to the extremity. The middle and hind tibiæ are curved and the latter elongate. The last ventral segment is produced into two rounded processes at the hind margin, and is impressed and emarginate between them.

Length, 9 mm.; *breadth*, 5 mm.

BURMA: Karen Hills, Cheba (*L. Fea*, Dec.). INDO-CHINA
(*R. Vitalis de Salvaza*).

Type in the Genoa Museum.

245. *Amphisternus phyllocerus*.

Amphisternus phyllocerus, Arrow, Trans. Ent. Soc. Lond. 1920,
p. 15.

Black and shining, with the elytra purplish and each decorated with two large pale yellow oval patches placed transversely, the first behind the shoulder and the second before the apex.

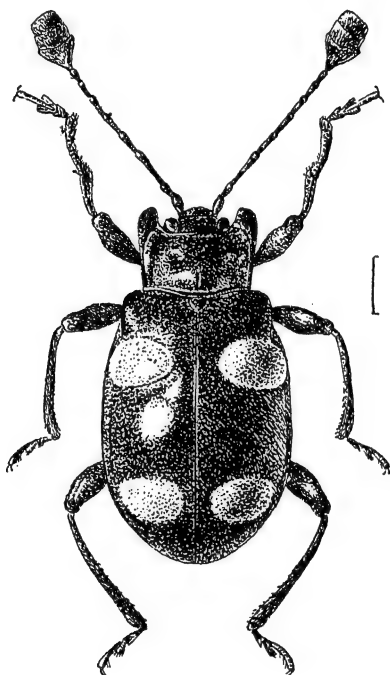


Fig. 51.—*Amphisternus phyllocerus*, male.

It is moderately elongate, not attenuate behind, and strongly convex. The pronotum is transverse, much narrower than the elytra, deeply impressed on each side of the middle and behind it, with the sides nearly straight and parallel, the front angles produced, thickened, blunt and closely punctured, the hind angles rectangular, the base finely margined and the lateral foveæ short, narrow and inconspicuous. The elytra are almost parallel-sided and not long, lightly punctured, with the pale areas smooth and very shining and raised above the general surface, the anterior one

in particular forming an abrupt rounded swelling. The antennæ are very long and slender, with the club very broad and flat, the 9th joint forming an almost equilateral triangle, the 10th and 11th together about as broad as they are long. The prosternal process is strongly bifurcate, the metasternum is transversely wrinkled and deeply impressed in front, the abdomen finely punctured beneath.

♂. The front tibia is straight from the base to the middle, and evenly curved from there to the extremity. The 5th ventral segment has a slight angular projection on each side.

Length, 7.5 mm.; *breadth*, 4.5 mm.

ASSAM: Patkai Hills (*W. Doherty*).

The *type* in the British Museum is unique.

246. *Amphisternus anceps*.

Amphisternus anceps, Gorb.,* Ann. Soc. Ent. Belg. xxxix, 1895, p. 328.

Black, fairly closely clothed above and beneath with fine decumbent golden silky hair, absent only from the extremities of the elytral tubercles, each elytron decorated with a small orange ring near the base, with a posterior branch running obliquely backwards, and uniting with an incomplete lateral ring (open anteriorly) situated behind the shoulder, and a zigzag postmedian bar with four anterior and two posterior teeth.

The body is moderately elongate and very convex. The pronotum is strongly transverse, with a rather deep median pit behind the anterior margin, the front angles strongly produced and bluntly angular, the sides not curved, feebly angulate near the middle, nearly parallel behind, with the hind angles right angles and the base rather broadly margined. The shoulders of the elytra are produced outwardly as rounded tubercles, smooth at the apex, there is a still more strongly-produced tubercle upon each side near the suture and a little before the middle, and a third rather minute one stands midway between the last and the humeral tubercles. The lateral margins of the elytra are evenly rounded from the shoulders to near the apices, which are obliquely truncate and bluntly produced. The lower surface of the body, like the upper, is rather closely punctured and pubescent, the prosternum is only slightly produced and feebly bifid, the mesosternum has its anterior part elevated into a sharp carina, and the metasternum has a sharply-defined arched and elevated anterior margin. The antennæ are not very long, the 3rd joint is less than half as long again as the 4th, the 5th rather longer than the 4th, 6 and 7 subequal, 8 short, 9, 10, and 11 forming a not very broad compact club, of which the 9th joint is triangular and the 10th and 11th are short and transverse.

♂. The front tibia is feebly curved and armed with a minute tooth beyond the middle, the middle tibia is incurved at the extremity and armed with a similar tooth similarly placed. The

last (5th) ventral segment is nearly straight at its posterior margin.

Length, 10 mm.; *breadth*, 6 mm.

S. INDIA : Kanara (*T. D. R. Bell*); Nilgiri Hills (*H. L. Andrews*). ASSAM : Garo Hills, Tura, 1400 ft. (*Mrs. S. Kemp*, Oct.).

Type in M. René Oberthür's collection.

Genus STICTOMELA.

Stictomela, Gorh., Proc. Zool. Soc. Lond. 1886, p. 155.

TYPE, *Stictomela chrysomeloides*, Gorh.

Range. Ceylon.

Short and broad, very convex above and broadly rounded behind, with long and slender legs and antennæ. Eyes very narrow and transverse, highly prominent and coarsely faceted. Antennæ with the basal joint oval, not very elongate, 2nd short, 3rd twice as long as the 4th, the remainder (except the last two) elongate, 4th to 8th successively diminishing, the club narrow, not very closely articulated. Pronotum with a deep median sulcus and fine basal stria, the front margin bearing a prominent stridulatory membrane, the sides broadly dilated. Scutellum short and transverse. Elytra with the shoulders inflated and produced outwards, the lateral margins a little flattened, the apices not produced, bluntly angular. Femora strongly attenuate at the base and bulbous at the distal end. Tibiæ slender and more or less curved. Basal joints of the tarsi broad. Front coxæ rather close together, the prosternal process narrow, truncate or forming a rounded knob behind. Mesosternum broadly transverse. Metasternum short, with a narrow elevated front margin. The mandible is stout, with its tip bifid and not produced. The lobes of the maxilla are nearly equal in length, the palpus stout and its terminal joint oval. The ligula has membranous lateral lobes and its palpi are short, with a transverse and cupuliform terminal joint.

Key to the Species of STICTOMELA.

- 1 (4) Elytra decorated with yellow or red spots.
- 2 (3) Spots in two parallel lines *chrysomeloides*, Gorh., p. 288.
- 3 (2) Spots not in parallel lines *opulenta*, Gorh., p. 289.
- 4 (1) Elytra not spotted *inflata*, Gorh., p. 290.

247. *Stictomela chrysomeloides*.

Stictomela chrysomeloides, Gorh.,* Proc. Zool. Soc. Lond. 1886, p. 156, pl. xvii, fig. 6.

Black, with the sides of the prothorax dark brown and the elytra deep coppery- or purplish-brown, each decorated with two pairs of nearly round, small orange spots, viz., one upon the posterior part of the inflated humeral callus, an inner one slightly

anterior to the last and a little elevated above the surface, and a posterior pair placed transversely considerably behind the middle.

It is a very broad, compact and convex insect, moderately shining above. The head is rather strongly punctured, the pronotum unevenly and sparingly and the elytra rather more closely and distinctly, each puncture of the latter bearing an extremely minute white seta. The disc of the pronotum has a deep longitudinal median groove and a punctiform pit on each side, the sides are broadly flattened, the lateral margins strongly rounded in front, contracted and nearly straight behind, the front angles very bluntly produced, the hind angles more acutely but not sharply, the base nearly straight, except near the angles, the marginal stria angulated in the middle and continued to the hind angles, the lateral foveae deeply and sharply impressed. The scutellum is very short and transverse. The elytra are about one-fourth as long again as their combined breadth, very convex, with the lateral margins a little flattened and regularly rounded from base to apex, the humeral calli inflated, but the width of the elytra at this part rather less than at the middle. The legs are long and stout, with the femora attenuate at the base but not very bulbous at the end, and the tibiae, especially the middle ones, a little curved. The antennae are moderately long, with the 3rd joint as long as the 4th and 5th combined, and the club moderately narrow. The prosternal process is narrow and truncate behind, the mesosternum is transversely pentagonal and the metasternum bears three deep impressions in a triangle, two near the anterior, and one near the posterior, margin. The abdomen is strongly and closely punctured beneath.

♂. The front tibia is a little excised at the extremity of the inner edge, and has a small tuft of hair immediately before the excision; the middle and hind tibiae are strongly curved and the former has a terminal tooth at its inner edge.

Length, 8 mm.; *breadth*, 5 mm.

CEYLON: Dikoya, 3800-4200 ft. (*G. Lewis*, Dec., Jan.).

Type in the British Museum.

248. *Stictomela opulenta*.

Stictomela opulenta, Gorrh.,* *Proc. Zool. Soc. Lond.* 1886, p. 156.

Black, with a slight purplish or coppery lustre upon the upper surface, and each elytron decorated with an anterior and a posterior range of small elongate blood-red spots, the anterior range consisting of one near the scutellum and the front margin, one a little behind and exterior to the first and a third at the end of the humeral carina, the posterior range consisting of three spots in a transverse curve a little behind the middle of the elytron, the inner pair close together.

Oval, compact and very convex, with the surface very shining above and bearing only extremely minute setae. The head is finely punctured, the pronotum very scantily and the elytra strongly.

The pronotum is very deeply longitudinally grooved, the stridulatory membrane at the front margin is large and prominent, the front angles are rather sharp, the sides strongly rounded in front, nearly straight and parallel behind, the hind angles acute, the base broadly margined, the marginal stria continued to the hind angles, and the lateral foveæ deeply and sharply impressed. The scutellum is strongly transverse. The elytra are about one-third as long again as their combined breadth, very convex, with their outer margins a little flattened and regularly rounded from base to apex, and the humeral calli moderately inflated. The legs are long and stout, with the femora strongly clubbed. The antennæ are slender, the 3rd joint shorter than the 4th and 5th combined, the club narrow and truncate at the end.

♂. The front tibia is hollowed out at the end of its inner face, and there is a small brush of hairs at the upper margin of the excision; the middle and hind tibiæ are rather strongly curved, and the latter has a conspicuous fringe of reddish hair along the posterior half of its inner edge.

The female is unknown.

Length, 9 mm.; *breadth*, 5 mm.

CEYLON: Bogawantalawa, 4900–5200 ft. (*G. Lewis*, March or April.)

Type in the British Museum.

Only a single specimen of this species is known at present.

249. *Stictomela inflata*.

Spathomeles inflatus, Gorh.* *Proc. Zool. Soc. Lond.* 1886, p. 154, pl. xvii, fig. 5; Arrow, *Trans. Ent. Soc. Lond.* 1920, p. 21.

Shining black, with the elytra blood-red, with the exception of the extreme margins, which dilate a little before and behind the inflated shoulders and at the apices. The anterior edge of the apical black margin is indefinite.

Broadly oblong in shape and extremely smooth and shining. The clypeus and forehead are rather strongly punctured. The pronotum is strongly transverse, unpunctured, with a deep median groove, the sides very broad and flat, the lateral margins strongly bisinuate, the front angles produced and very blunt, the hind angles acutely produced, the base trisinuate, with a marginal sulcus angulate in the middle, the lateral foveæ deeply and sharply impressed and continued to the hind angles; there is a small rounded elevation near the middle of the lateral border on each side, but at a distance from the outer edge. The scutellum is broadly transverse, feebly rounded behind and slightly angulate in front, the angle corresponding with a very slight notch in the hind margin of the pronotum. The elytra are very smooth and shining, unpunctured except near the apices, but with a juxtapatural stria, short and broad, with the humeral calli strongly dilated, produced outwards, flattened above and rounded at the extremities, the lateral margins flattened, nearly straight and

parallel and the extremities very broadly rounded. The prosternal process is rounded behind, the mesosternum broadly transverse, the metasternum margined in front. The metasternum is unpunctured, the abdomen very feebly punctured. The legs are long, the tibiæ slender in the basal part and a little curved. The antennæ are not very long, with the 3rd joint more than twice the length of the 4th, the club narrow and rather loosely articulated.

♂. The front tibia is very feebly hollowed internally near the extremity, and the middle tibia is rather strongly curved and angulate at the end of the inner edge.

Length, 9.5–10.5 mm.; *breadth* (at shoulders) 6–7 mm.

Ceylon: Dikoya, 3800 ft. (Dec., G. Lewis).

Type in the British Museum.

Genus **BRACHYTRYCHERUS.**

Brachytrycherus, Arrow, Trans. Ent. Soc. Lond. 1920, p. 12.

TYPE, *Brachytrycherus perrotteti*, Arrow.

Range. India.

Body short and compact, moderately convex. Prosternum moderately broad, produced and rounded behind, where it is very slightly dilated and forms a rounded knob, bearing two small tubercles where it meets the narrowed anterior part of the mesosternum. Mesosternum very broadly transverse. Metasternum margined by a deep groove in front. Pronotum bearing a stridulatory membrane at the anterior margin, broadly dilated at the sides and margined at the base. Elytra short, rounded at the shoulders, with narrow lateral margins. Legs slender, the femora not strongly clavate. Antennæ not very slender, with the 3rd joint half as long again as the 4th, the last three joints forming a narrow loosely-jointed club. Mandible short and stout, bifid at the end, with the upper tooth chisel-shaped and sharp and the lower one bluntly rounded. Lobes of the maxilla narrow and nearly equal in length; palpus stout, pointed at the end. Ligula broadly transverse, scarcely sinuate at the front margin; labial palpus extremely short, with the last joint transverse.

Key to the Species of BRACHYTRYCHERUS.

- | | | |
|-------|---|---------------------------------------|
| 1 (4) | Upper surface finely punctured,
decorated with red markings. | |
| 2 (3) | Upper surface scantily punctured . . | <i>perrotteti</i> , Arrow, p. 292. |
| 3 (2) | Upper surface rather closely punctured | <i>madurensis</i> , Arrow, p. 292. |
| 4 (1) | Upper surface very coarsely punctured, without red markings | <i>rufepunctatus</i> , Gorh., p. 293. |

250. *Brachytrycherus perrotteti*.

Brachytrycherus perrotteti, Arrow, Trans. Ent. Soc. Lond. 1920, p. 13.

Black and shining, with each elytron decorated with transverse undulating blood-red bands, the first placed behind the shoulder and remote from the suture, the second before the apex, approaching both the inner and outer margins and having its widest part parallel to the suture.

Broadly oval and convex, with the pronotum irregularly but rather strongly punctured, convex in the middle, which is longitudinally channelled behind, broadly dilated at the sides, with the lateral margins strongly rounded in front, straight and nearly parallel behind, the front angles produced, the hind angles acute and a little produced, the base strongly margined, the lateral foveæ deep and continued to the posterior angles. The elytra are evenly punctured, regularly rounded at the sides, which are narrowly margined. The antennæ are not very slender, with the 3rd joint half as long again as the 4th, the last three forming a narrow loosely-jointed club.

Length, 6-7 mm.; breadth, 4-4.5 mm.

S. INDIA: Nilgiri Hills.

Type in the British Museum.

251. *Brachytrycherus madurensis*.

Brachytrycherus madurensis, Arrow, Trans. Ent. Soc. Lond. 1920, p. 14.

Black and not very shining, the elytra suffused with a slight metallic lustre and each decorated with two transverse zigzag rusty-red bands, the first narrow, placed behind the shoulder and produced internally almost to the basal margin, the posterior one beyond the middle and approaching, but not reaching, the inner and outer margins. The anterior elytral band may have a prolongation into the sutural angle, and the anterior angles of the pronotum are sometimes vaguely reddish.

Broadly oval and convex, with the upper surface strongly and closely punctured. The pronotum is broad and rather flat, with the discoidal part slightly convex, the lateral margins strongly rounded in front, straight and almost parallel behind, the front angles produced and blunt, the hind angles rectangular or slightly acuminate, the base nearly straight and narrowly margined and the lateral foveæ very short. The elytra are evenly punctured, very convex, strongly and regularly rounded at the sides, with narrow flattened margins and separately rounded apices. The middle and hind tibiæ are gently curved and the antennæ very slender, the 3rd joint half as long again as the 4th and the club very narrow and loosely articulated.

♂. The middle tibia has a very feeble tooth or angulation beyond the middle of its inner edge, and the antennæ are a little longer and more loosely articulated.

Length, 7 mm.; *breadth*, 4.5 mm.

S. INDIA: Madura, Shembaganur; Kodaikanal (*T. V. Campbell*).
Type in the British Museum.

There is a male in the collection of Mr. E. A. Butler. In a pale specimen in the Hungarian National Museum, submitted to

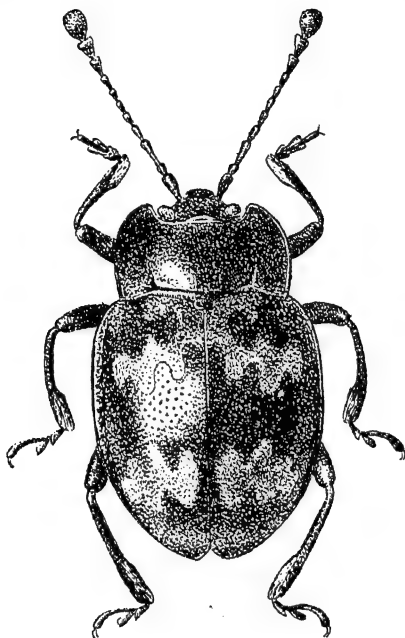


Fig. 52.—*Brachytrycherus madurensis*, male.

me by Mr. E. Csiki, the pronotum and elytra are light yellowish-red, the latter having a zigzag black median band, a black shoulder-spot and a subapical spot, and the femora are broadly ringed with yellow.

252. *Brachytrycherus rudepunctatus*.

Amphisternus rudepunctatus, Gorh.,* *Proc. Zool. Soc. Lond.* 1897, p. 457.

Black, dull and subopaque above and shining beneath, with the tarsi, the organs of the mouth and the last joint of the antennae rust-red.

Very short, broad and convex, with fairly slender legs and antennae. The pronotum is nearly twice as broad as its length in the middle, rather feebly punctured, with broad flattened lateral margins, the sides strongly rounded, the front angles prominent but not sharp, the hind angles rectangular, the base

rather broadly margined and the lateral foveæ deep and slightly convergent. The conjoined elytra are cordiform and as broad as they are long, with rows of large, deep and rather irregular pits, partially confluent externally; the shoulders are rounded, the outer margins flattened and a little reflexed and the extremities sharply pointed. The lower surface is very smooth and shining. The prosternal process is very short, the mesosternum transverse and deeply excavated on each side, the metasternum very short, with a deep pit on each side near the middle coxæ and the first ventral segment one and a half times as long as the metasternum. The 3rd joint of the antenna is nearly twice as long as the 4th, and the last three form a very narrow club, the last two strongly transverse.

Length, 7.5 mm.; *breadth*, 5.5 mm.

ASSAM: Patkai Hills (*W. Doherty*).

Type in the British Museum.

The type is unique.

The uniformly dark colouring, peculiar form and unusual sculpture of the elytra render this a very easily recognisable insect.

Genus **EUMORPHUS**.

Eumorphus, Weber, *Observ. Ent.* 1801, p. 31; *Fabr., Syst. Eleuth.* ii, 1801, p. 12; *Gerst., Mon. Endom.* 1858, p. 88; *Chap., Gen. Col.* xii, 1876, p. 92.

Eumorphoides, Guér., *Rev. Mag. Zool.* (2) x, 1858, p. 12.

Enasimus, id., l. c. p. 16.

Haplomorphus, id., l. c. p. 18.

Heterandrus, id., l. c. p. 26.

TYPE, *Erotylus quadriguttatus*, Illig.

Range. The Indo-Malayan Region.

Elongate and moderately convex in form, with slender legs and antennæ, the elytra in some species with broad flattened outer margins. The 3rd joint of the antenna is very long, at least twice as long as the 4th, joints 4 to 8 progressively diminishing in length and 9 to 11 forming an abrupt, very flat and rather broad club, the three joints of equal width, the last truncate. The eyes are transverse, prominent and moderately coarsely faceted. There is a stridulating file, very finely striated, upon the occiput. The mandible is broad, rounded externally, fringed internally and produced at the tip into a simple, slender chisel-shaped tooth. The lobes of the maxilla are short, the palpus stout, its last joint fusiform. The mentum is trapezoidal, the ligula broad, the labial palpus very short, the last joint large and hemispherical. The pronotum is more or less flattened at the sides, the lateral margins are narrowly elevated and bisinuate, the angles generally produced, the hind ones acute; the base has a marginal sulcus, and the lateral foveæ are moderately impressed. The prosternum forms a narrow process projecting a little beyond the front coxæ; the mesosternum is pentagonal, as long as it is

wide; the anterior part of the metasternum between the middle coxæ forms a sharply defined transverse strip, cut off behind by a deep groove, and the posterior part has an angular marginal groove, cutting off a triangular strip, which is cleft in the middle behind. The femora are rather long, thickest in the middle and tapering to each end, or clavate as in *E. fryanus*.

The elytra are generally more attenuated behind in the female, and the dilated margins, when present, are widest in the male. The antennæ of the latter are rather more slender, and the front tibia generally, and sometimes also the middle one, is armed in the male with a spine at the inner edge. The 5th sternite may be notched at the apex in one or both sexes and in the female a 6th is generally extruded.

All the members of this genus are ornamented with four yellow spots, varying in size, but not in position, according to the species, the only known exceptions being the Javan *E. bipunctatus*, Perty, in which the spots on each side coalesce, and *E. ocellatus*, Arrow, from Tonkin, in which there are two separate anterior spots instead of one. These pale spots are generally more shining and free from punctures than the remaining surface of the elytra, and sometimes raised above the general level.

A peculiarity of the genus is a tendency for the lateral margins of the prothorax to form irregularly broken lines, inconstant and frequently asymmetrical. *E. politus* and *assamensis* conspicuously illustrate this.

Like all the allied genera, these insects feed upon the fungi which attack dead or decaying trees, and in which they may be found in abundance in all their stages. The larva, pupa and adult form of *E. quadriguttatus* (var. *pulchripes*) have been described and figured by Bugnion (Ann. Soc. Ent. France, 1909, p. 282, pl. xi). The larva (see fig. 3, p. 7) is a velvety-black creature of flattened shape, and fringed at the sides with leaf-like appendages bristling with spines or hairs of rather complex structure. Five (Bugnion says four) of the appendages on each side of the body are snow-white. The head is very short and broad, with a short 2 jointed antenna and three minute ocelli on each side, there are three thoracic segments, each carrying a pair of rather long and slender legs, and nine short abdominal segments. Each of the twelve segments bears a pair of lateral appendages and these alternate with shorter and narrower intermediate processes.

Key to the Species of EUMORPHUS.

- 1 (14) Outer margins of the elytra broadly dilated.
- 2 (3) Elytra subcircular, conically elevated in the male *marginatus*, F., p. 296.
- 3 (2) Elytra oval, not conically elevated in the male.
- 4 (11) Pronotum very shining.
- 5 (10) Femora entirely dark.

- 6 (7) Apical angles of the elytra sharply produced, flattened margins half as wide behind as the remaining surface.... *politus*, Gerst., p. 298.
- 7 (6) Apical angles of the elytra not sharply produced, flattened margins not half as wide behind as the remaining surface.
- 8 (9) Purple, with small yellow spots *tetraspilotus*, Hope, p. 299.
- 9 (8) Bluish-black, with larger yellow spots *fryanus*, Gorb., p. 300.
- 10 (5) Femora red at the end..... *austerus*, Gerst., p. 300.
- 11 (4) Pronotum opaque.
- 12 (13) Elytra shining, legs dark *opacicollis*, sp. n., p. 301.
- 13 (12) Elytra opaque, femora red at the end *depressus*, sp. n., p. 302.
- 14 (1) Outer margins of the elytra not broadly dilated.
- 15 (24) Upper surface more or less shining.
- 16 (21) Elytra very shining.
- 17 (18) Club of the antenna very broad; pale patches of the elytra very large *westwoodi*, Guér., p. 302.
- 18 (17) Club of the antenna not very broad; pale elytral patches not very large.
- 19 (20) Hind angles of the prothorax not acutely produced *trabeatus*, sp. n., p. 303.
- 20 (19) Hind angles of the prothorax acutely produced *sanguinipes*, Guér., p. 304.
- 21 (16) Elytra with a satiny gloss, not very shining.
- 22 (23) Club of the antenna broader .. *andamanensis*, Gorb., p. 305.
- 23 (22) Club of the antenna narrower. *quadriguttatus*, Ill., p. 305.
- 24 (15) Upper surface entirely opaque (sooty), with very small spots. *assamensis*, Gerst., p. 307.

253. *Eumorphus marginatus*.

Eumorphus marginatus, Fabr., Syst. Eleuth. ii, 1801, p. 12; Oliv., Entom., vi, 1808, p. 1065, genus 99, pl. i, fig. 1; Gerst., Mon. Endom. 1858, p. 91.

Blue-black, subopaque above, except in the middle of the pronotum, and shining beneath, each elytron decorated with two rather large, round, yellow spots, separated by about their own diameter from those of the other side and by rather more from each other. The pale spots are more shining than the remaining surface of the elytra.

Very broad, with long legs and antennæ. The head is rather closely punctured. The pronotum is extremely minutely and scantily punctured with its sides and base very finely coriaceous; it is strongly transverse, very feebly convex in the middle and flattened at the sides, the lateral margins are bisinuate, the front

angles rather bluntly and the hind angles sharply produced and the basal foveæ minute. The scutellum is closely punctured and finely setose. The elytra are coriaceous, and have extremely wide, flattened outer margins, considerably more than half as wide as the remaining portion, their edges strongly and continuously rounded from base to apex. The metasternum is very smooth and shining and rather deeply hollowed in the middle, and the abdomen is very coarsely punctured at the sides, base and apex.

♂. The hind angles of the prothorax are produced backwards into long, slender appendages, the elytra are elevated into a blunt point at the middle of the suture, giving the dorsal part a conical shape, and the outer flattened margins are very broad and not

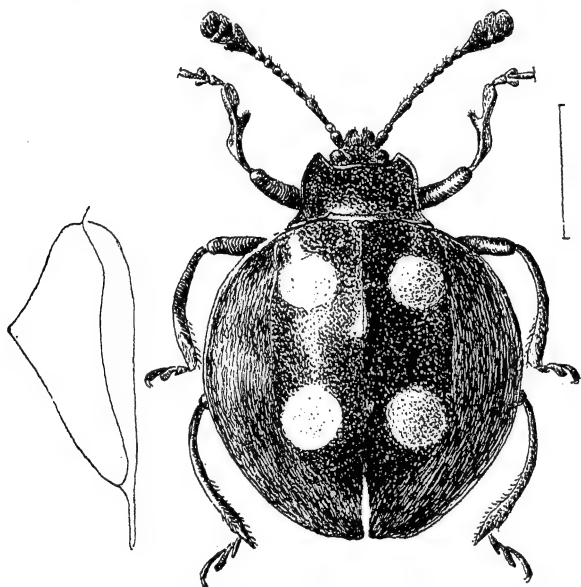


Fig. 53.—*Eumorphus marginatus*, male, and outline of elytron in profile.

produced at the apices, so that the conjoined elytra are almost circular in outline. The front tibia bears a very strong, blunt and tufted tooth beyond the middle of the inner edge and a strong, rounded carina upon the inner half of the outer edge; the middle tibia is very strongly curved and fringed internally on its posterior half, and the hind tibia is curved at the base, straight from there onwards and produced into a sharp spine at the extremity, the posterior two-thirds closely fringed internally. The last sternite is feebly emarginate in the middle, and the last tergite is produced and bifid at the end.

♀. The hind angles of the prothorax are only slightly produced, the flattened outer margins of the elytra are a little wider at the

apices than at the sides, giving the conjoined elytra a broadly oval outline, the middle tibiæ are curved and the front and hind tibiæ nearly straight. The 5th sternite is rounded behind and a 6th is generally extruded.

Length, 14–20 mm.; *breadth*, 9–16.5 mm.

TENASSERIM (*Helfer*). MALAY PENINSULA. SUMATRA. JAVA. BORNEO.

Type unknown.

Taken in Sumatra on a *Polyporus* by Mr. Jacobson, who notes that the beetles have a strong unpleasant smell, much like that of the seeds of *Parkia speciosa* (LEGUMINOSÆ).

This is the largest, and perhaps the most remarkable, of all the Oriental ENDOMYCHIDÆ. The extreme dilatation of the outer margins of the elytra produces an effect of size which is partly illusory, and the wide margins, as well as the conical elevation of the elytra (which is peculiar to the males) recall the form of some of the largest of the Tortoise-beetles (CASSIDIDÆ).

Eumorphus marginatus is a very abundant, as well as a very conspicuous, insect, with a wide range in the Malayan Region.

254. *Eumorphus politus*.

Eumorphus politus, Gerst.,* Archiv f. Nat. xxiii, 1857, 1, p. 226; id. Mon. Endom. 1858, p. 98.

Eumorphus opalinus, Gorb.,* Stett. Ent. Zeit. lxii, 1901, p. 201 (new syn.).

Reddish-brown, with a purplish iridescent lustre upon the upper surface, the club of the antenna black, and each elytron decorated with two small, round bright yellow spots, more distant from each other than from those on the opposite side.

Elongate-oval, very smooth and shining, with slender legs and antennæ. The head is finely punctured, the pronotum and elytra scarcely perceptibly. The pronotum is very smooth in the middle and opaque at the sides, the lateral margins are irregularly crenulate, the front angles rather bluntly produced, the hind angles acute, the base very narrowly margined and the lateral foveæ minute. The elytra are elongate-oval, convex, with wide flattened margins which, at the extremity, where they are acutely produced, are at least half as wide as the remaining (convex) surface. The metasternum is very smooth and unpunctured, and the abdomen is irregularly punctured at the base, sides and apex. The club of the antenna is fairly broad.

♂. The hind angles of the prothorax are produced into curved filamentous processes, which closely embrace the shoulders of the elytra. The front tibia is a little dilated, and bears a strong acute oblique spine a little beyond the middle of the inner edge, the middle tibia is rather strongly curved and the hind tibia gently curved and fringed along the inner side. The metasternum bears a few scattered elevated granules posteriorly, the 5th sternite is a little excised at an obtuse angle behind and the last tergite produced and minutely bifid at the tip.

♀. The hind angles of the prothorax are sharp but not produced. The 5th sternite is rounded behind and the 6th extruded.

Length, 11–13 mm.; *breadth*, 6–7 mm.

TENASSERIM (*Helper*). SIAM. MALAY PENINSULA. BORNEO. SUMATRA.

Type in the British Museum; co-type in the Stettin Museum. Type of *E. opalinus* in M. René Oberthür's collection.

255. *Eumorphus tetraspilatus*. (Pl. I, fig. 2, ♂.)

Eumorphus tetraspilatus, Hope,* Griffith's Anim. Kingd. ii, 1832. p. 787, pl. lx, fig. 6, pl. lxxv, fig. 6; Gerst., Mon. Endom. 1858, p. 103.

Red-brown, with a purplish iridescent lustre upon the upper surface, the club of the antenna black and each elytron ornamented with two small, round, bright yellow spots equidistant from one another and from those on the opposite side.

It is of rather regularly ovate shape, with stout legs and very smooth and shining. The pronotum is broad, convex in the middle, with wide flattened lateral margins, gently bisinuate at the sides, with all the angles produced, the front ones scarcely, the hind ones very, acute. The elytra also have wide flattened margins, the outline of which is continuous with that of the prothorax, and the discoidal part of the pronotum and elytra is very finely and unequally punctured. The antennal club is rather broad. The lower surface of the body is very smooth and shining.

♂. The posterior angles of the prothorax are produced as long curved filamentous processes, closely embracing the shoulders of the elytra. All the tibiae are curved, the front ones greatly distorted, bearing a strong rounded carina at the middle of the upper edge, a similar but slighter one at the anterior part of the outer edge and an extremely strong oblique tooth just before the middle of the inner edge. The last ventral segment is deeply angularly excised and the ventral side of the last dorsal segment conspicuously exposed.

♀. The extremities of the elytra are a little more produced than in the male.

Length, 11–14 mm.; *breadth*, 5.5–8 mm.

TENASSERIM (*Helper*). SIAM. PERAK. JOHORE. SINGAPORE. SUMATRA. NORTH BORNEO.

Type in the British Museum.

The purplish iridescent lustre varies very greatly in cabinet specimens and is sometimes entirely absent, but it is no doubt a conspicuous feature of the living insect. Specimens which have retained their iridescence generally have the sides of the elytra, including the flattened margins, dull and velvety in appearance, but this peculiarity seems liable to disappear with the iridescence.

256. *Eumorphus fryanus*.

Eumorphus fryanus, Gorh.,* Trans. Ent. Soc. Lond. 1875, p. 13.

Bluish-black, smooth and shining on the dorsal part of the pronotum and elytra and subopaque laterally, each elytron decorated with two fairly large bright yellow spots, separated by about their own diameter from those on the other elytron and by rather more from each other.

Ovate in shape and moderately convex, with fairly stout antennæ and legs, the femora in both sexes strongly clavate. The head is finely punctured, the pronotum almost imperceptibly and the elytra very finely and sparingly. The pronotum is rather broad, convex in the middle, flat at the sides, with the front angles bluntly produced and the hind angles acute. The elytra have broad flattened margins, which are not distinctly wider posteriorly than at the sides. The metasternum, the middle of the basal sternite and the 5th sternite are sparsely punctured and setose, and the remainder of the abdomen is very smooth beneath. The club of the antenna is rather broad.

♂. The hind angles of the prothorax are produced into slender hooked appendages which embrace the shoulders of the elytra. The front tibia has a strong oblique tooth, tufted at the end, just beyond the middle of its inner edge and an obtusely angular carina upon the inner half of its outer edge; the middle tibia is rather abruptly bent in the middle and fringed internally beyond the bend; the hind femur is strongly arched and the hind tibia fringed internally. The last sternite is a little emarginate behind and fringed at the hind margin, with a minute tooth in the middle, and the last tergite is produced and bifid.

♀. The front and middle tibiæ are a little dilated, the former bisinuate externally, the latter gently curved.

Length, 11–13 mm.; breadth 6·5–8 mm.

TENASSERIM (*Helper*). MALAY PENINSULA. SARAWAK.

Type in the British Museum.

The yellow spots are a little larger than those of *E. austerus* and *E. tetraspilotus*, but not quite so large as those of *E. marginatus*. The strong curvature of the hind femora of the male is a peculiar characteristic of this species.

257. *Eumorphus austerus*.

Eumorphus austerus, Gerst.,* Archiv f. Nat. xxiii, 1857, 1, p. 227; id., Mon. Endom. 1858, p. 105.

Purplish-black, not very shining on the upper surface, with the basal joint of the antenna and the outer third of each femur bright scarlet, and each elytron decorated with two small round bright yellow spots, equidistant from each other and from those on the opposite side.

It is ovate in shape, a little depressed, with slender antennæ

and legs. The upper surface is finely coriaceous, with rather fine shallow and inconspicuous punctures. The pronotum is broad, with rather wide flattened lateral margins, the outer edges gently bisinuate, the front ones strongly produced but not acute, the hind ones acute. The elytra have wide flattened outer margins, which vanish at the shoulders and are broadest at the extremity. The 3rd joint of the antenna is as long as the 4th and 5th together and the club is not very wide. The lower surface is smooth and shining.

♂. The hind angles of the prothorax are more produced than in the female and embrace more or less the shoulders of the elytra. The front tibia has a very strong sharp oblique tooth, placed before the middle of the inner edge, and a strong carina on the upper face of its outer half, which is curved; the middle tibia is very strongly curved and the hind tibia rather less strongly. The 5th ventral segment is angularly excised in the middle of its hinder edge.

♀. The extremities of the elytra are produced and the flattened margins nearly twice as wide behind as at the sides. The 5th ventral segment has a gently curved emargination, exposing a 6th segment.

Length, 11-13.5 mm.; *breadth*, 6-7.5 mm.

ASSAM: Patkai Hills (*W. Doherty*); Sibsagar, Cachar (*J. Wood-Mason*); Garo Hills, above Tura, 3500-3900 ft. (*Dr. S. Kemp*, July, Aug.). BURMA (according to Gerstaecker). SIAM. MALAY PENINSULA.

Type in the Berlin Museum; co-types in the British and Stettin Museums.

Taken by Dr. Kemp on a fallen tree.

258. *Eumorphus opacicollis*, sp. nov.

Dark brown, with a purplish lustre upon the elytra, the antennæ black and each elytron decorated with two bright yellow spots, separated by about twice their diameter from each other and from those of the opposite side.

Oval in shape, moderately convex, with slender legs and antennæ. The pronotum is broad and subopaque, with the sides flattened, the lateral margins gently bisinuate, the front angles bluntly, and the hind angles acutely, produced. The elytra have broad flattened margins, their dorsal part is smooth and shining, with an exceedingly fine and sparse punctuation and the lateral part opaque and clothed with extremely fine inconspicuous hairs. The antennal club is not very broad. The lower surface is rather closely punctured and finely but not densely pubescent.

♂. The hind angles of the prothorax are produced into long curved spines closely embracing the shoulders of the elytra. All the tibiæ are curved and the front ones are distorted and bear a rounded carina near the middle of the outer edge and a strong oblique tooth beyond the middle of the inner edge.

♀. The extremities of the elytra are produced as flattened lobes and the hind margin of the 5th sternite is arcuately excised.

Length, 10–11 mm.; *breadth*, 5 mm.

BURMA: Momeit (*W. Doherty*). TENASSERIM: Mergui (*E. T. Atkinson*). SIAM: Renong. PENANG.

Type in the British Museum.

This species resembles *E. depressus* rather closely, but the legs are dark, the elytra more convex and shining and the yellow spots a little larger. It is smaller than *E. tetraspilotus* and the pronotum is not glossy.

259. *Eumorphus depressus*, sp. nov.

Reddish-brown, with a purple suffusion, the first joint of the antenna and the outer half of the femora bright red, and each elytron ornamented with two very small, round, pale yellow spots, separated from one another by about three times their own diameter.

It is of elongate-oval shape, rather feebly convex and opaque above, with the legs fairly stout, the antennæ not very long and the club small and narrow. The pronotum, like the elytra, is not distinctly punctured, it is rather narrow, its lateral margins are gently bisinuate, the front angles produced but blunt, the hind angles very slightly acute and not produced, the base straight and narrowly margined. The elytra have wide, flattened and a little hollowed outer margins, and their outline is not continuous with that of the thorax. The lower surface of the body is very smooth and shining.

♂. The front tibia bears a very strong, broad-based and acute spine before the middle of its inner edge, the middle and hind tibiæ are curved, and the 5th sternite is notched in the middle of its hinder edge.

♀. The extremities of the elytra are broadly produced and the flattened margin is twice as wide there as at the side. The 5th ventral sternite is straight at its hinder edge.

Length, 10–11 mm.; *breadth*, 5–5.5 mm.

BURMA: Karen Hills (*W. Doherty*); Senmigion (*L. Fea*, Feb.). TENASSERIM (*Helper*).

Type in the British Museum.

The upper surface is rather flat in this species and is also rather dull and opaque, although not quite so much as in *E. assamensis*.

260. *Eumorphus westwoodi*.

Haplomorphus westwoodi, Guér.,* *Rev. Mag. Zool.* (2) x, 1858, p. 19.

Eumorphus westwoodi, Gorh., *Endom. Recit.* 1873, p. 36.

Black, very smooth and shining, each elytron decorated with two bright yellow, transversely oval, patches, separated by an interval equal to their own diameter.

It is of rather shortly oblong form and very convex above, with

rather stout antennæ and legs, the former having an extremely broad and compact club, half as broad as it is long. The pronotum is twice as wide as it is long in the middle and almost devoid of visible punctuation; the lateral margins are thickened and bisinuate, the front angles produced but not very acute, the hind angles very acute and slightly divergent, the base straight and finely margined, the lateral foveæ short and parallel. The elytra are very finely and sparsely punctured, with rather sharply angular shoulders and distinctly but narrowly flattened outer margins. The mesosternum is transversely quadrate, the metasternum very smooth and shining, with a deep pit on each side, close to the raised anterior margin.

♂. The front tibia has a short oblique tooth a little beyond the middle of its inner edge; the middle tibia is slightly bent at a third of its length, and from there gently curved, with its inner edge finely serrate and fringed with hair.

Length, 8-10 mm.; *breadth*, 4.5-5 mm.

TENASSERIM. MALAY PENINSULA. BORNEO.

Type in the British Museum.

The type-specimen, described by both Guérin and Gorham, is the only example I have yet seen from within the Indian boundaries.

261. *Eumorphus trabeatus*, sp. nov.

Black and very shining, with the outer half of the femora bright red and each elytron decorated with two narrow transverse yellow or orange bars, extending from near the suture almost to the outer edge, the first bar behind the shoulder and parallel to the base, the second midway between the middle and the apex.

Ovate in shape and very convex. The pronotum is strongly transverse, with the sides parallel behind, slightly converging in front, the front angles produced and fairly sharp, the hind angles rectangular. The pronotum is very minutely and sparsely punctured, the elytra a little more strongly and closely, and the reflexed outer margins of the latter are narrow. The antennæ are long and slender, with a narrow club. The lower surface is shining, the metasternum very smooth, the abdomen finely but not closely punctured, except upon the last sternite.

♂. The front tibia is armed with a long, strong and acute tooth placed at the middle of its inner edge, the middle tibia is rather strongly incurved at the end, and the hind tibia is rather feebly sinuous. The last sternite has a wide, obtusely-angular excision at the middle of its hinder edge.

Length, 11 mm.; *breadth*, 6 mm.

BURMA: Sumprabum, Putao District (*Bernard Fischer*).

Type in the British Museum.

A single male specimen was taken by Mr. Fischer and presented by Mr. J. E. Black.

The species is easily recognisable by the narrow transverse bars

upon the elytra, replacing the usual spots. It is closely related to *E. sanguinipes*, but the prothorax is much shorter and more parallel-sided.

262. *Eumorphus sanguinipes*.

Haplomorphus sanguinipes, Guér.,* Rev. Mag. Zool. (2) x, 1858, p. 20.

Eumorphus sanguinipes, Gorh., Trans. Ent. Soc. Lond. 1874, p. 438; id., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 293; Arrow, Trans. Ent. Soc. Lond. 1920, p. 16.

Black, very smooth and shining, with a deep purple lustre upon the elytra, the distal half of the femora bright coral-red and each elytron decorated with two bright yellow transverse spots or patches, extending outwardly to very near the lateral margins and separated by about their own length from the corresponding patches of the other side. Longitudinally the patches are separated by a distance of about three times their own breadth.

Moderately narrowly ovate in shape and very convex. The pronotum is rather transverse, with the lateral margins gently bisinuate and all the angles acutely produced. The pronotum is almost devoid of punctures, and those of the elytra are minute and not very numerous. The reflexed outer margins of the elytra are very narrow. The antennæ are slender, the club not very wide. The lower surface is smooth and shining.

♂. The posterior angles of the thorax are rather more produced than in the female, forming acute curved lobes embracing the shoulders of the elytra. The front tibia is armed with a strong oblique tooth arising from the middle of the inner edge and the middle tibia is rather strongly curved. The last sternite of the abdomen has a broad semicircular excision of its posterior edge, exposing the ventral surface of the last dorsal segment, which is minutely bilobed at the end.

♀. The last sternite is minutely but deeply notched.

Length, 9-11 mm.; breadth, 5-5.5 mm.

ASSAM: Manipur (*W. Doherty*). BURMA: Karen Hills, Cheba, 2400-4200 ft. (*L. Fea*, Dec.); Ghecu (*L. Fea*, March, April); Kachin Hills, Cauri (*L. Fea*, Aug., Nov.); Ruby Mines (*W. Doherty*). TENASSERIM. INDO-CHINA.

Type in the British Museum.

Gorham has applied the name *E. murrayi* to Burmese specimens with shorter hind angles to the thorax and simply curved middle tibiæ in the male, but the true *E. murrayi* is another species inhabiting the Philippine Islands. Believing Guérin's type-specimen, then in his own collection, not to have been described, and misreading the abbreviation "Tan" (Tenasserim) in Hope's handwriting upon it, Gorham redescribed it and wrongly attributed it to Java. Later he referred to this locality as "possibly correct, for the species of *Eumorphus* are widely distributed." But with the single exception of *E. quadriguttatus*

Ill., it would be much truer to say that the species of *Eumorphus*, in comparison with other genera of insects, are rather narrowly localised.

263. *Eumorphus andamanensis*.

Eumorphus andamanensis, Gorh.,* Ent. Month. Mag. xi, 1875, p. 180.

Black or very deep purplish-blue, not very shining, but with a satiny gloss above, with the femora (except the basal half) orange and each elytron decorated with two bright yellow, transversely oval, spots, nearly reaching the outer margins and separated from each other by about twice their own width and from those opposite by about their own length.

The body is elongate and convex, with the pronotum transverse, the sides bisinuate, the front angles bluntly, and the hind ones acutely, produced. The pronotum is scarcely, the elytra very minutely, punctured; the lateral margins of the latter are very narrow. The lower surface is finely punctured but shining, except upon the last ventral segment. The club of the antenna is broad.

♂. The front tibia is armed with a strong tooth, arising from the middle of its inner edge. The middle tibia is excised just before the extremity, and has a blunt tooth above the excision. The elytra are rounded behind. There is a brush of pale erect closely-set hairs at the middle of the penultimate ventral segment, and the terminal segment is broadly notched at the middle of the hind margin.

♀. The elytra are a little produced at the extremities.

Length, 10–12.5 mm.; breadth, 5–6 mm.

ANDAMAN ISLANDS (*Roepstorff*). NICOBAR ISLANDS (*Roepstorff*).

Type in the British Museum.

This species is closely similar to *E. quadriguttatus*, var. *pulchripes*, Gerst., but is on the whole a little larger, and the femora are deep yellow instead of bright red upon their outer half. In addition the antenna has a rather broader club, and in the male the front tibial tooth is stouter and arises from the middle of the edge, instead of before it.

264. *Eumorphus quadriguttatus*.

Erotulus quadriguttatus, Illig., Wiedemann's Arch. f. Zool. i, 2, 1800, p. 124, pl. i, fig. 4.

Eumorphus sumatrae, Weber, Observ. Ent. 1801, p. 59.

Eumorphus immarginatus, Fabr., Syst. Eleuth. ii, 1801, p. 11.

Heterandrus quadriguttatus, Guér., Rev. Mag. Zool. (2) x, 1858, p. 26.

Eumorphus quadriguttatus, Gerst., Mon. Endom. 1858, p. 110, pl. i, figs. 1–12.

Var. *pulchripes*, Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 228; id., Mon. Endom. 1858, p. 112; Bugnion, Ann. Soc. Ent. France, 1909, p. 282, pl. xii, figs. 1–6 (larva, pupa and imago).

Black, smooth but not very shining above, the elytra sometimes

a deep violet, and each decorated with two large, pale yellow, nearly round or slightly transverse spots, about equal in diameter to the interval between each horizontal pair and nearly but not quite reaching the outer margins of the elytra, the first spot placed behind the shoulder, the second before the apex.

Elongate-oval in shape, with the legs and antennæ slender. The pronotum is distinctly transverse, not perceptibly punctured, with the disc convex and shining and distinctly channelled along the middle of its posterior half; the lateral margins obtusely angulate in the middle and contracted in front and behind, the front angles bluntly produced, the hind angles acutely. The elytra are very minutely and feebly punctured, the shoulders slightly tumid and the lateral margins very narrow. The antennæ are slender and the club moderately broad. The lower surface is smooth and shining, with the exception of the last sternite, which is angularly emarginate behind.

♂. The front tibia is acutely notched at its inner edge before the middle, forming an acute spinose tooth. The middle tibia is a little excised just before the extremity at the inner edge and armed with an oblique tooth just before the excision. Its apex bears internally a sharp spur or bristle. The elytra are rounded behind. There is a hairy pad occupying the median part of the last three ventral segments, and the terminal segment is deeply and broadly notched at its hind margin.

♀. The extremities of the elytra are a little produced, and the last ventral segment has a small triangular excision in the middle of its hind margin.

Length, 7.5–12 mm.; *breadth*, 4–6 mm.

SIKKIM: Darjeeling, Mungphu (*E. T. Atkinson*). BURMA. TENASSERIM (*Helper*). S. INDIA: Coorg, Sidapur. CEYLON: Peradeniya (*E. E. Green*, Aug.). ANDAMAN ISLANDS. TONKIN. ANNAM. MALAY PENINSULA. JAVA. SUMATRA. BORNEO.

Type in the Berlin Museum; that of *E. immarginatus* in the Copenhagen Museum.

Var. pulchripes, Gerst. The femora are bright coral-red, except in the basal half.

This variety is found together with the typical form in some localities, but apparently not in all. A series of specimens from S. India (Sidapur, Coorg) consists of about equal numbers of each form, and I have also seen both from Sikkim, but throughout the Malayan region the red-legged form is evidently rare, if not absent, and in Ceylon that variety alone has been found. Gerstaecker, who knew only Malayan specimens of the type-form (excepting a single Himalayan specimen which he regarded as of doubtful authenticity) and Ceylon specimens of the variety, naturally supposed them to be specifically different, but I can find nothing to confirm this view. Gerstaecker has described the male of *E. quadriguttatus* as having upon the last ventral segment a carina, which is absent in the other form, but this was an error

due to the slightly defective condition of the specimen he examined. This specimen is now in the British Museum. Other slight divergences in his descriptions are also found to have no weight when a sufficient series is compared.

E. quadriguttatus was found at Dehra Dun in February under the bark of *Shorea robusta*, and the variety *pulchripes* was taken by Mr. R. Senior-White in Ceylon beneath logs of *Hevea brasiliensis* about a year after felling.

265. *Eumorphus assamensis*.

Eumorphus assamensis, Gerst.,* Archiv f. Nat. xxiii, 1857, 1, p. 229; id., Mon. Endom. 1858, p. 121.

Eumorphus subguttatus, Gerst.,* l. c. (new syn.).

Sooty black, each elytron decorated with two small shining yellow round spots, elevated above the general surface and placed near the outer margin at an equal distance from each other and from those on the other side. The whole upper surface is opaque and coriaceous, without visible punctures.

It is moderately elongate in form, with slender legs and antennæ, the club of the latter rather narrow. The disc of the pronotum is convex, the sides are flat, the lateral margins rather irregular, converging in front and parallel behind, with the front angles rather sharp, the hind angles very acute and the base exactly coadapted to the elytra at the shoulders. The shoulders are very acutely carinate but not prominent, the lateral margins of the elytra are very narrow and the apices rounded and not produced.

♂. The front tibia has a strong rounded carina upon the anterior half of its upper edge and a very strong oblique tooth placed in the middle of the inner edge. The middle tibia is incurved at the extremity. The 5th sternite is long and slightly emarginate at the extremity.

♀. The 5th sternite is shorter and rounded behind.

Length, 7–11 mm.; breadth, 3·5–5·5 mm.

ASSAM: Khasi Hills; Naga Hills. BURMA: Toungoo (G. Q. Corbett). TENASSERIM (*Helper*). SIAM. TONKIN. MALAY PENINSULA. BORNEO. SUMATRA.

Types of *E. assamensis* and *subguttatus* in the British Museum.

This species varies very greatly in its dimensions and to a less extent in the size of the pale spots. Malayan examples seem commonly to have these a little smaller than those from Siam and Assam, which led Gerstaecker to regard them as different species, but the difference is not a constant one.

Genus SPATHOMELES.

Spathomeles, Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 218; id., Mon. Endom. 1858, p. 61.

Rhachidophorus, Guér., Rev. Mag. Zool. (2) ix, 1857, p. 581.

Cucodæmon, Thoms., Arch. Ent. i, 1857, p. 154 (part).

TYPE, *Spathomeles anaglyptus*, Gerst. (Java, Borneo, etc.).

Range. The Malayan Region, Indo-China, Assam.

Of rather elongate form, the elytra tapering behind, with very slender legs and antennæ. Eyes moderately large, very prominent, coarsely faceted. Antennæ with the basal joint elongate and clavate, the 2nd small, the 3rd about twice as long as the 4th, 4th to 8th successively diminishing, 9th to 11th forming a closely-articulated, rather short and broad and very flat club, the 9th joint triangular, the last two transverse. Pronotum margined in front and behind, the stridulatory membrane occupying the middle of the front margin and not or scarcely projecting forward, the front angles generally strongly produced, the basal foveæ sharply impressed. Scutellum semicircular. Elytra rather prominent at the shoulders, with the sides rounded and the apices produced. Legs slender, the femora strongly attenuated at the base and bulbous in the outer half, the tibiæ very slender and the tarsi moderately long and broad. Prosternum contracted between the front coxæ, pointed and rather long behind. Mesosternum relatively narrow, but transversely elevated between the middle coxæ. Metasternum more or less excavated, its posterior marginal groove straight or nearly so. Mandible produced and chisel-shaped at the tip, with a minute basal tooth beneath. Lobes of the maxilla of nearly equal length, with thick terminal tufts, the outer lobe broad at the end; the palpus stout, with the terminal joint barrel-shaped. Ligula broad, with the front margin arcuate; the palpi very short and compact, their last joint very large and strongly transverse.

The sexes differ to a remarkable degree in this genus. The males are usually distinguished by teeth or spines at the inner edge of the tibiæ, but contrary to the general condition these processes are more developed upon the middle and hind than upon the front legs. In most of the species there is also a remarkable hooked process near the middle of each elytron in the same sex. The shape of the last ventral segment may also show sexual differences.

266. *Spathomeles decoratus*.

Spathomeles decoratus, Gerst.,* Archiv f. Nat. xxiii, 1857, 1, p. 219; id., Mon. Endom. 1858, p. 66.

Cucodæmon hamatus, Thoms., Arch. Ent. i, 1857, p. 154.

Rhachidophorus latreillei, Guér., Rev. Mag. Zool. (2) x, 1858, p. 61.

Var. *ornatus*, Gorb.,* Proc. Zool. Soc. Lond. 1886, p. 155; id., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 292.

Black, with each elytron decorated with three or four bright orange-coloured spots, viz. an oval one placed rather obliquely near the scutellum, two placed transversely just before the middle and generally united, but sometimes separate, and a lunulate bar placed transversely before the apex, concave behind and exhibiting four points in front. The upper surface is moderately shining, but the orange spots are more so, and the scutellar and inner

median spots are elevated above the general surface and very glossy. The head, lower surface and legs are very shining.

The body is elongate and the elytra are very convex. The head is sparsely punctured, and has two shallow pits between the eyes. The pronotum is rather narrow at the base, which has a sharply-impressed marginal stria; it is moderately closely but unevenly punctured and is transversely impressed beyond the middle, with two deep pits placed transversely before the middle

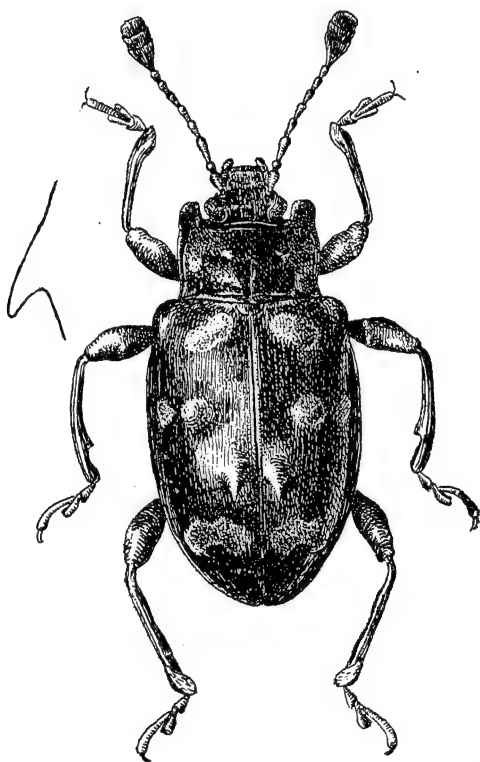


Fig. 54.—*Spathomeles decoratus*, male, and (on left) profile of the elytral process in this sex.

and an elevated spot on each side near the margin, in line with the pits; the lateral margins are raised, very broad in front, not curved but generally very obtusely angulate in the middle, strongly but very bluntly produced in front, with the hind angles acute. The scutellum is very broadly transverse. The elytra are finely and not closely punctured, much broader than the prothorax at the base, with the shoulders prominent, the lateral margins a little flattened, nearly straight from the shoulders to the middle

and gently curved behind. The mesosternum is transversely impressed in front, and the metasternum has a deep pit in front.

♂. Each elytron is armed with a sharp hooked process placed near the suture behind the middle and directed backwards. The front femur has a sharp tooth at the inner edge near the base, the front and middle tibiæ are curved, the middle tibia is fringed with hair and has a rather blunt tooth beyond the middle, and the hind tibia has a feeble tooth before the middle. The last sternite is straight at its hind margin.

♀. The last sternite is roundly pointed behind.

Length, 12–15 mm.; *breadth*, 6–7 mm.

HIMALAYAS: Yambung, 1100 ft.; Rotung, 1400 ft. (*S. Kemp*, Abor Expedition, Dec., Jan.). BENGAL: Kuntimari (Dec., *C. F. C. Beeson*).

Type in the British Museum; also that of the var. *ornatus*.

This was taken under the bark of *Shorea robusta* by Dr. Beeson, and in rotting tree-trunks by Dr. Stanley Kemp, who has recorded that the insects exuded a yellow fluid with a strong musty odour from the ends of their femora.

The elytral spots vary considerably in size and shape. The var. *ornatus*, Gorh., is the phase in which they consist of three large spots, but the median one frequently, and the apical one occasionally, divides into two. In a variety common in Indo-China the male has a very sharp spine on the hind tibia. Gerstaecker's type is labelled "Java," but this locality requires confirmation.

Genus ENGONIUS.

Engonius, Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 220; id., Mon. Endom. 1858, p. 69.

TYPE, *Engonius sexguttatus*, Gerst. (Malay Peninsula).

Range. India and the Malayan Region.

Rather oblong in shape and highly convex, with long antennæ and legs. The head is deeply sunk in the prothorax, the eyes are narrow, coarsely faceted and not large, and there is a stridulatory plate upon the occiput. The pronotum is strongly transverse, the front angles are strongly produced, sharp or blunt, the lateral margins elevated, the base margined and the lateral foveæ deeply impressed. The prosternum is very narrow between the front coxæ and produced a short distance behind them. The mesosternum is subquadrate between the middle coxæ, and the metasternum has an anterior lobe and a narrow posterior marginal strip, separated by a nearly straight groove. The femora are rather club-shaped and the tarsi have moderately broad lobes. The 3rd joint of the antenna is twice as long as the 4th, the 4th to 8th differ little in length and the last three form a flattened club of moderate width. The mandible is very stout, the tip chisel-shaped and not produced, with a rounded inner tooth. The lobes of the maxilla are narrow and not very unequal in length,

and the palpus is rather stout and not pointed at the end. The labium is short and broad, with the ligula very lightly sinuate at its front margin; the palpi short, with the terminal joint rhomboidal and rather transverse.

The tibiæ (especially the front ones) are modified in the males, which also exhibit peculiar elevations upon the ventral surface of the abdomen.

Key to the Species of ENGONIUS.

- | | | | |
|----|------|---|-------------------------------------|
| 1 | (8) | Upper surface pubescent. | |
| 2 | (3) | Pronotum without median groove. | <i>pubescens</i> , sp. n., p. 311. |
| 3 | (2) | Pronotum with deep median groove. | |
| 4 | (7) | Median groove of the pronotum dilated in front, anterior angles not very sharp. | |
| 5 | (6) | Postmedian elytral bar broad | <i>annularis</i> , Gerst., p. 312. |
| 6 | (5) | Postmedian elytral bar narrow | <i>vicinus</i> , sp. n., p. 313. |
| 7 | (4) | Median groove of the pronotum linear, anterior angles sharp | <i>lunulatus</i> , Gerst., p. 314. |
| 8 | (1) | Upper surface smooth | |
| 9 | (14) | Elytra decorated with irregular bands. | |
| 10 | (13) | Antennal joints 4 to 8 subequal. | |
| 11 | (12) | Anterior angles of the pronotum bluntly acuminate | <i>gratus</i> , Gorh., p. 315. |
| 12 | (11) | Anterior angles of the pronotum very bluntly rounded | <i>signifer</i> , Gorh., p. 316. |
| 13 | (10) | Joints 4 to 8 of the antennæ unequal, 6, 7, and 8 very small | <i>varicornis</i> , sp. n., p. 317. |
| 14 | (9) | Elytra decorated with six small spots | <i>opimus</i> , Gorh., p. 317. |

Gorham has recorded *E. klugi*, Gerst., as found in Burma (Ann. Mus. Civ. Genova, xxxvi, 1896, p. 293), but the single specimen in the Genoa Museum which he so named does not belong to the species, which is found in the Malay Peninsula and Borneo.

267. *Engonius pubescens*, sp. nov.

Black, with each elytron decorated with two irregular transverse orange patches, the anterior one just behind the shoulder, reaching the outer, but not the inner, margin and curving forward almost to the base, the posterior one not reaching either margin and deeply excised behind.

Oblong, rather narrow, highly convex and entirely clothed with very minute grey setæ. The pronotum is strongly transverse, rather closely punctured, with its lateral margins strongly bisinuate, the front angles produced but not sharp, the hind angles acutely produced, the base broadly margined by a deep groove, which is feebly angulate in the middle, and the lateral foveæ produced to the base but extending only a very short distance forwards. The scutellum is semicircular and strongly

punctured, and the elytra are strongly punctured and opaque; they are rather long, scarcely dilating behind, the shoulders are very prominent and the sutural angles a little rounded. The prosternal process is very narrow, but a little knobbed at the end, the mesosternum is elevated in the middle and deeply impressed at the sides and front, the metasternum is finely punctured, with a strongly elevated anterior margin, and the abdomen is strongly and closely punctured. The legs are stout and the antennæ long, the 3rd joint of the latter as long as the 4th and 5th together, and the last three forming a fairly broad, compact club, of which the basal joint is about as long as it is wide and the last two strongly transverse.

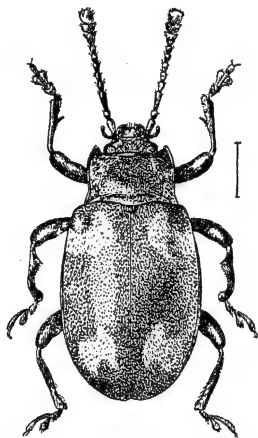


Fig. 55.—*Engonius pubescens*, male.

♂. The front tibia bears a very strong oblique tooth near the middle of its inner edge, and the middle tibia is incurved at its extremity and bears a little beyond the base an angular internal flange, armed along its posterior edge with a row of six or seven sharp teeth.

♀. Unknown.

Length, 8 mm.; breadth, 4 mm.

BERMA: Karen Hills (*W. Doherty*). INDO-CHINA: Nam Tiene, Upper Mekong River (*R. Vitalis de Salvaza*).

Type in the British Museum.

268. *Engonius annularis*.

Engonius annularis, Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 221, pl. ii, fig. 3; id., Mon. Endom. 1858, p. 75.

Black, not very shining, each elytron ornamented with a red humeral circle, which is incomplete anteriorly and doubly toothed posteriorly, and a broad transverse bar of the same colour behind

the middle, which has three pointed processes anteriorly and is narrowly excised behind.

The surface is clothed with a very fine and inconspicuous greyish pubescence. The body is oblong in shape. The pronotum is strongly transverse, moderately punctured and rather shining, with a posterior median groove which dilates upon the anterior half and includes a flat lozenge-shaped elevation; the lateral margins are raised and closely punctured, straight and parallel behind and slightly convergent in front, the front angles are strongly produced and very blunt, the hind angles slightly acute, the base strongly margined and the lateral foveæ parallel and not quite reaching the middle. The humeral angles of the elytra are rather prominent, the sides gently rounded and the apices not produced. The metasternum is smooth and shining in the middle, finely punctured and pubescent at the sides, and the abdomen is closely and deeply punctured. The antennæ are of moderate length, with a rather narrow club.

♂. The front and middle tibiæ are rather strongly curved in their apical half, and the last sternite bears in the middle a strong transverse elevation, longitudinally carinate in the middle and produced as a rounded lamina on each side.

Length, 8.5 mm.; *breadth*, 5 mm.

CEYLON: Kanthalai (*C. S. F. Baker*, Oct.).

Type in the Berlin Museum.

A single male specimen in the British Museum is the only representative of this species known to me.

269. *Engonius vicinus*, sp. nov.

Engonius annularis, Gorh. (*nec* Gerst.), Ann. Soc. Ent. Belg. xxxix, 1895, p. 329.

Black, not very shining, each elytron ornamented with a red humeral circle, incomplete anteriorly and doubly toothed posteriorly, and beyond the middle with a narrow transverse bar, which has four points anteriorly and is narrowly and deeply excised behind.

The surface is clothed with a rather sparse covering of greyish hair. It is rather oblong in shape, and the whole upper surface is closely and deeply punctured. The pronotum is broadly transverse, strongly margined in front and behind, with a posterior median groove, dilating upon the anterior half into a lozenge-shaped loop, and rugosely punctured and slightly excavated margins; the sides are slightly convergent in front and behind, the front angles produced and very bluntly rounded, the hind angles rectangular. The humeral angles of the elytra are rather prominent, the sides gently rounded, the apices conjointly rounded and not produced. The metasternum is smooth and shining in the middle, finely punctured and thinly hairy at the sides, and the abdomen is closely and deeply punctured all over. The antennæ are moderately slender, with

a rather narrow and loosely-jointed club, the joints of which are not transverse, while the last one is truncate at the end.

♂. The front and middle tibiæ are strongly curved in the apical half, and the last ventral segment bears in the middle a bilobed transverse elevation, the lobes directed forward and outward, rounded in front and fringed with setæ at their outer edge.

Length, 9–11 mm.; *breadth*, 4·5–5·5 mm.

BOMBAY: Belgaum (*H. E. Andrewes*).

Type in the British Museum.

There is a deceptive resemblance between this species and *E. annularis* and *lunulatus*. In addition to the different male characters, it can be distinguished from the former by a narrower posterior elytral band, and from the latter by the blunt angles and dilated median groove of the pronotum.

270. *Engonius lunulatus*.

Engonius lunulatus, Gerst.,* *Archiv f. Nat.* xxiii, 1857, 1, p. 222; id., *Mon. Endom.* 1858, p. 77.

Black, not very shining, each elytron decorated with a blood-red crescent-shaped mark just behind the shoulder (frequently interrupted in the middle), its arms directed forward and the outer one extending a little along the lateral margin, and an ante-apical transverse bar constricted in the middle.

Oblong-oval, convex, finely and closely clothed above with erect yellowish pubescence. The pronotum is rather finely punctured, margined in front and behind, with a narrow median groove; the sides are nearly straight and parallel behind, strongly rounded in front, with the front angles rather sharp, the hind angles acutely produced and the basal foveæ parallel and extending to the middle. The elytra are finely and closely punctured, with the humeral angles rather prominent, the sides nearly parallel to beyond the middle, the extremities a little produced and flattened and the apical angles rounded. The mesosternum is excavated, the metasternum almost smooth but very sparsely and finely pubescent, and the abdomen rather closely and evenly punctured. The joints of the antenna are elongate, except the last two, and the club is close, narrow and truncate at the end.

♂. The front tibia is a little hollowed internally at the end, and bears a minute sharp tooth at the upper edge of the hollow, the middle tibia is rather strongly curved and the 5th sternite bears a rounded hairy median elevation, with a smooth carina on each side.

Length, 9–11 mm.; *breadth*, 4·5–5·5 mm.

CEYLON: Colombo, coast level (*G. Lewis*, April).

Type in the Berlin Museum; co-type in the Stettin Museum.

Although superficially almost identical in appearance with *E. annularis*, Gerst., this species is easily distinguished by the narrow median groove and sharp front angles of the pronotum.

In fresh specimens the clothing of velvety hair is very conspicuous, but it is liable to be rubbed off the upper surface more or less completely. This has happened to Gerstaecker's type-specimen, in which only traces of the clothing remain at the sides of the pronotum and towards the ends of the elytra. The original description is therefore rather misleading, the species being characterised as "glaber." It is also described as having a metallic lustré, the elytra of the type having a faint purplish tinge, which also is not always traceable. Three other specimens, probably taken by Nietner together with the type, have been submitted to me with the latter by Dr. Kuntzen. These have retained the hairy covering in varying degrees, and in my opinion certainly belong to the species, although not so treated by Gerstaecker.

The pale marks upon the elytra vary considerably in this species. The anterior crescent not infrequently is divided into two nearly equal parts and the posterior bar, which is rather broad in the typical phase, may dwindle to a narrow sinuous streak.

271. *Engonius gratus*.

Engonius gratus, Gorh., Ann. Soc. Ent. France, 1891, p. 399; id., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 293.

Shining black, with each elytron decorated with two blood-red marks, the first placed obliquely behind the shoulder, arising a little distance from the basal and sutural margins and ending very near the outer margin, with four anterior and four posterior denticulations, the second placed transversely behind the middle, with four denticulations in front and emarginate behind.

This species is rather narrowly elongate and very convex. The head and pronotum are distinctly, unevenly and not closely punctured. The latter has thickened lateral margins, straight and parallel behind and gently rounded in front, the front angles produced and bluntly acuminate, the hind angles sharply rectangular, the base margined and the lateral foveæ produced to the middle. The scutellum is transversely oval and the elytra are conjointly oval, a little narrowed at the shoulders, strongly and rather closely punctured, the shoulders not very prominent, the outer margins narrow and evenly rounded and the apices a little attenuated. The prosternal process is rather long, the mesosternum pentagonal and deeply hollowed on each side, the metasternum very smooth and shining, with a deep longitudinal channel, the first and last ventral segments sparingly but distinctly punctured. The antennæ are slender, the 3rd joint half as long again as the 4th, the club narrow and compact, the 9th joint elongate, the 10th and 11th strongly transverse. The femora are strongly clavate, the tibiæ rather stout and the middle ones a little curved.

♂. There is a strong oblique spine at the middle of the inner edge of the front tibia, and the middle tibia has a well-marked

excision of its inner edge just beyond the middle. The last sternite is notched in the middle of the hind margin.

Length, 10 mm.; *breadth*, 5 mm.

BURMA: Katha Forest (*E. P. Stebbing*, Feb.); Bhamo (*L. Fea*, July); Teinzo (*L. Fea*, May); Rangoon; N. Chin Hills (*E. F. Watson*). TENASSERIM: Malewoon (*L. Fea*, July, Aug.). CAMBODIA. INDO-CHINA.

Found by Stebbing beneath the bark of a fallen teak.

Type in the collection of Monsieur E. Fleutiaux.

The pronotum is rather inconstant in shape, some specimens having it distinctly longer and narrower than others.

272. *Engonius signifer*.

Engonius signifer, Gorh.,* Trans. Ent. Soc. Lond. 1875, p. 311.

Black and very shining, each elytron decorated with two irregular bright yellow patches, rather widely separated at the suture from the corresponding patches of the other side. The anterior patch is placed a little behind the base, almost attains the outer margin, incompletely encloses a black spot anteriorly and gives off two finger-like processes behind, which sometimes almost unite with two corresponding processes of the posterior patch. The latter is placed behind the middle of the elytron, is almost equidistant from the inner and outer margins and is twice excised at its hinder edge.

The body is rather oblong in shape, convex and very shining. The head is strongly punctured, the pronotum rather more finely and very unevenly, with a deep anterior median sulcus, the sides flattened and the outer margins thickened, scarcely curved but slightly contracted from the middle to the front and hind angles, of which the former are produced and very bluntly rounded in front, the latter sharply rectangular; the base is broadly margined and the lateral foveæ are short, not reaching the middle. The scutellum is strongly transverse and the elytra are strongly, evenly and rather closely punctured, with the shoulders not very prominent, the outer margins nearly straight in the middle and a little flattened behind. The 3rd joint of the antenna is about half as long again as the 4th, the 9th triangular, the 10th and 11th large and about as long as wide. The metasternum is very smooth and shining, the abdomen closely punctured beneath. All the tibiæ are a little thickened and incurved at the extremity.

♂. The front tibiæ have a slight excision of the inner edge immediately before the extremity. The last ventral segment bears a transverse elevation with an overhanging rounded knob at each end, and the apex of the segment bears a rectangular projecting flange.

Length, 8-9 mm.; *breadth*, 4.5 mm.

ASSAM: N. Khasi Hills (*Col. Godwin-Austen*); Shillong (June, Pusa Coll.); Manipur (*W. Doherty*); Tura, Garo Hills, 1200-1500 ft. (*S. Kemp*). BURMA: Karen Hills, 2700-3300 ft. (*L. Fea*,

Dec.). PUNJAB: Kangra District, Kulu, 7000 ft. (*O. H. Walters*, May).

Type in the British Museum.

273. *Engonius variicornis*, sp. nov.

Black and very shining, with two transverse yellow bars upon each elytron, the anterior one a little behind the base, almost reaching the outer margin but far from the suture and a little constricted in the middle, the posterior one of similar shape, placed a little before the extremity and distant from both inner and outer margins.

Oblong-oval in shape, rather broad and convex, with the pronotum more than twice as wide as it is long in the middle, almost imperceptibly punctured, with the sides almost straight and parallel, except in front, where they are strongly rounded; the front angles very prominent but blunt, the hind angles rectangular, the lateral foveæ straight, parallel and reaching the middle, and the base very deeply sulcate. The scutellum is smooth and almost semicircular. The elytra are rather closely and evenly punctured, dilating feebly to a short distance from the shoulders and gently narrowing from there to the extremity. The legs and antennæ are fairly stout, and the latter have the 2nd joint very short, the 3rd, 4th and 5th elongate, the 3rd a little longer than the other two, the 6th, 7th and 8th bead-like, very short and close, and the last three transverse, forming a compact club. The prosternal process is long and rounded behind, the mesosternum is very smooth and a little hollowed, the metasternum is moderately strongly and closely punctured and the abdomen very densely.

♂. The front tibiæ are very broad, contracting rapidly from the middle to the base.

Length, 5 mm.; *breadth*, 2.5 mm.

SIKKIM: Gopaldhara, Rungbong Valley, 4720 ft. (*H. Stevens*, May, June). ASSAM: Abor Country, Kobo, 400 ft. (*S. Kemp*, Dec.).

"Rotten wood" (*S. Kemp*). "Taken on vegetation" (*H. Stevens*).

Type in the British Museum.

This is very similar to *E. brevipes*, Arrow, from Indo-China, and has an identical pattern. It is quite distinct by the abrupt diminution of the 6th, 7th and 8th joints of the antenna compared with the two preceding them, and in *E. brevipes* the hind, instead of the front, tibiæ of the male are dilated.

274. *Engonius opimus*.

Engonius opimus, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 293.

Black or blackish-brown, with the prothorax deep red and each elytron decorated with three pale yellow spots, two placed

obliquely behind the shoulder, small and nearly round, and the third a little larger, transversely oval, situated midway between the middle and the apex.

Ovate, highly convex and very shining. The head is distinctly punctured, the pronotum very finely and sparsely but a little more strongly in the middle. The sides of the latter are gently rounded, not divergent, narrowly margined, the front angles strongly produced and rather blunt, the hind angles sharp, very slightly produced, the base margined by a deep sinuous stria, the lateral foveæ deep and produced to the middle of the pronotum; its disc. has a deep, short longitudinal sulcus upon the basal

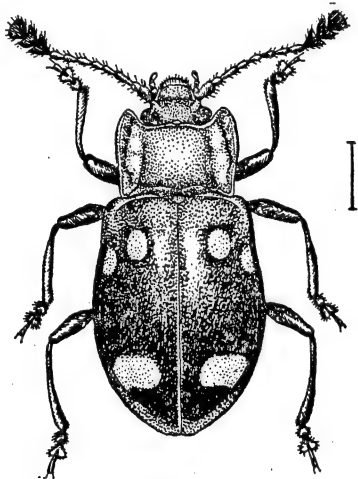


Fig. 56.—*Engonius opimus*, female.

part. The scutellum is strongly transverse. The elytra are rather strongly, closely and evenly punctured, with prominent shoulders and narrow flattened margins. The antennæ are not very long, the 3rd joint is shorter than the 4th and 5th together, the club moderately broad and joints 10 and 11 strongly transverse. The femora are long, not strongly clavate.

The male is unknown.

Length, 8.5 mm.; breadth, 4.5 mm.

BURMA: Karen Hills, 2700–3300 ft. (*L. Fea*, Dec.).

Type in the Genoa Museum.

Only a single specimen has yet been found. The specimen from Indo-China referred to the species by me in 1920 belongs to another, allied but yet unnamed, form.

Genus **PEDANUS.**

Pedanus, Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 230; id., Mon. Endom. 1858, p. 127; Chap., Gen. Col. xii, 1876, p. 94.

TYPE, *Pedanus quadrilunatus*, Gerst.

Range. The Indo-Malayan Region.

Body pear-shaped, moderately elongate, with the prothorax relatively small. Legs and antennæ moderately long, the latter with the 3rd joint as long as the 4th and 5th together, joints 4-8 slightly elongate and subequal, the last three forming a rather narrow compact club, the terminal joint obliquely truncate. Eyes large and prominent, coarsely faceted. Pronotum short but not broad, gently emarginate in front, with a broad stridulatory membrane in the middle, the lateral margins obtusely angulate before the middle, nearly parallel in front, scarcely contracted behind, the front angles blunt, the hind angles acute, the base straight, rather narrowly margined by a deep straight groove, and the lateral foveæ narrow, almost reaching the middle. Elytra with very prominent shoulders, narrow reflexed margins and rounded apices. Front coxæ very prominent, separated by a narrow prosternal process, scarcely extending beyond the coxæ. Mesosternum not broad. Hind coxæ not very widely separated. Basal sternite of the abdomen not very long, its front margin forming two rounded lobes, with a broad aperture between them. Mandible short, not stout, consisting of a large rounded basal molar portion and a thin semimembranous outer lobe of oval shape, without teeth or produced apex. Maxilla with the outer lobe produced as a long sharply acuminate thin membrane, fringed externally; the inner lobe half the length of the outer, very slender, fringed internally; palpus moderately long, the 2nd and 3rd joints rather slender at the base. Ligula with widely diverging narrow lobes; labial palpi very short and compact, with the basal joint very small and globular and the 2nd and 3rd strongly transverse.

The genus is Malayan, but two species, first discovered in Borneo and Java respectively, extend their range through the Malay Peninsula to India. Another insect, *Eumorphus schneideri*, Schönh., from 'India Orientalis,' was tentatively placed in the genus by Gerstaecker, but the identity of this is quite uncertain, as well as the actual habitat indicated by the above phrase. The remarkable sternal appendages of the male of the typical species have not previously been noticed, and I am not able to say whether they occur in the other Indian species, not having seen a male example. A pair of very short processes occurs in another species of the genus from Java. The processes overlap a pocket-like opening between the metasternum and abdomen, which, as mentioned in the Introduction, is found in other genera, but they are immensely larger in males of this species than the narrow opening screened by them.

Key to the Species of PEDANUS.

- 1 (4) Club of the antenna broad and compact; prothorax not narrowed in front.
- 2 (3) Elytral patches almost round, the anterior one not interrupted at the shoulder..... *quadrilunatus*, Gerst., p. 320.
- 3 (2) Elytral patches of very irregular shape, the anterior one interrupted at the shoulder *westermanni*, Gerst., p. 321.
- 4 (1) Club of the antenna very loose and narrow; prothorax narrowed in front..... *vestitus*, sp. n., p. 322.

275. *Pedanus quadrilunatus*.

Pedanus quadrilunatus, Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 230; id., Mon. Endom. 1858, p. 129; Arrow, Trans. Ent. Soc. Lond. 1922 (1923), p. 485.

Pedanus gerstaeckeri, Gohr.,* Endom. Recit. 1873, p. 37, fig. 5 (new syn.).

Black or brownish-black, with the elytra deep purplish-black and each decorated with two bright yellow rounded patches, the first at the shoulders, reaching the base and outer margin but not the inner margin, the second just before the apex and not quite reaching the inner or outer margin.

Moderately elongate and convex, with long legs and antennæ, closely punctured above but rather shining. The head is finely and not closely punctured, the pronotum more strongly and rather closely: the latter is strongly transverse, with all the angles produced, the front angles very blunt, the hind angles acute, the sides narrowly margined and feebly angulate near the middle, the base straight and strongly margined and the lateral foveæ reaching the middle, slightly convergent and terminating in a depression on each side. The scutellum is very finely punctured and the elytra finely and closely; the shoulders are very prominent, the sides are gently rounded and have distinct flattened margins, which dilate a little to beyond the middle, and the extremities are rounded. The lower surface is smooth and shining. The antennæ are not very slender, the 3rd joint is twice as long as the 4th, the 5th to 8th are short and the club broad and compact and equal in length to the five preceding joints.

♂. The middle tibia bears a slight tooth beyond the middle of its inner edge and its extremity is a little incurved. The hind margin of the metasternum is produced between the hind legs as a horizontal forked appendage, its two limbs being broadly dilated and truncate at the end.

Length, 7–8 mm.; *breadth*, 3.5–4 mm.

ABOR COUNTRY: Upper Rotung (S. Kemp, Jan.). **TENASSERIM:** Mergui (W. Doherty). **MALAY PENINSULA.** **BORNEO.** **SUMATRA.** **LINGA ARCHIPELAGO** [East of Sumatra]: Singkep Island.

Type in the Berlin Museum; that of *gerstaeckeri* in the British Museum.

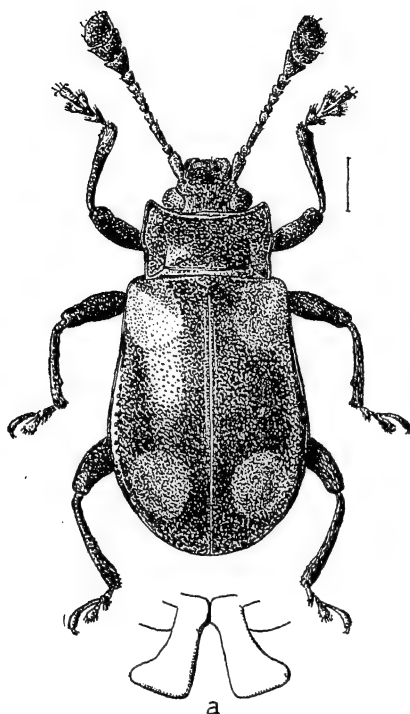


Fig. 57.—*Pedanus quadrilunatus*, male. (a) Metasternal appendage.

This was taken from under the leaf-stem of a plantain by Dr. Stanley Kemp, who has recorded that it “emitted a stinking fluid from the femoral joints.”

276. *Pedanus westermanni*.

Pedanus westermanni, Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 231; id., Mon. Endom. 1858, p. 131.

Black or brownish-black, with the elytra blue-black and each decorated with two broad irregular orange patches, the first upon the shoulder, but not including the humeral callus, a little broader than it is long, with three feeble angulations at the hind margin, the second a little before the apex, not quite reaching the inner or outer edge, its anterior margin produced into three and the posterior margin into two (longer) pointed processes.

Elongate, moderately convex, scarcely shining, closely and rather strongly punctured and clothed with extremely fine and short grey

hairs or setæ, a little longer and more evident upon the head, legs and lower surface. The legs are long; the antennæ fairly slender, with joints 4 to 8 slightly elongate and the last three forming a broad compact club nearly equal in length to the preceding five joints. The head is shining, not strongly or closely punctured. The pronotum is coarsely and rather rugosely punctured, about half as broad again as its length in the middle, with all four angles produced, the anterior ones rather abruptly truncate, the posterior acute, the sides narrowly margined and gently angulate in the middle, the base straight and strongly margined and the basal foveæ slightly converging, extending to the middle of the pronotum and ending in a depression on each side. The scutellum is very finely punctured. The elytra are coarsely and closely punctured, much broader at the base conjointly than the pronotum, gently dilated to beyond the middle, with the shoulders almost rectangular, the outer margins narrowly flattened and the extremities rounded.

♂. The middle tibia bears a short blunt tooth before the middle of its inner edge, and the last ventral segment is very slightly emarginate.

Length, 8 mm.; *breadth*, 4 mm.

ASSAM: Sibsagar (*S. E. Peal*, Indian Museum). MALAY PENINSULA: Penang. JAVA (according to Gerstaecker).

Type in the Berlin Museum; co-type in the Copenhagen Museum.

I have seen only female examples.

277. *Pedanus vestitus*, sp. nov.

Black, with each elytron decorated with two rather narrow irregular orange marks, the first extending transversely from the outer margin behind the shoulder to near the inner margin and sending a branch to the basal margin, the second placed before the apex and having three joints in front and two behind.

Elongate, with slender legs and antennæ and rather closely clothed with short grey hairs. The upper surface is rather strongly and closely punctured. The eyes are small and widely separated. The prothorax is small, not very strongly transverse, narrowly margined all round, the lateral margins sharply angulate before the middle, converging from this point to the front angles, which are blunt and little produced, almost parallel but very feebly concave from the same point to the hind angles, which are acute; the base is almost straight and the lateral foveæ are short and slightly convergent towards the front. The elytra are long and not very convex, the shoulders are very prominent, the lateral margins very narrowly flattened and the apices gently and conjointly emarginate. The metasternum is rather smooth and shining, the mesosternum and abdomen not shining, the latter rather closely punctured. The antennæ are very long and slender, all but the last two joints distinctly elongate, and the club narrow, very loosely-articulated and scarcely equal in length to the preceding four joints.

The male is unknown.

Length, 9 mm.; breadth, 4 mm.

N. MALABAR: Taliparamba (*P. S. Nathan*, June).

Type in the British Museum.

A single specimen, taken upon a Pepper Vine, has been presented to the Museum by the Coimbatore Agricultural College.

This species has a peculiar aspect, owing to its hairy clothing, narrow form, small prothorax narrowing anteriorly, and the very slender antennæ. The emarginate tips of the elytra are also very peculiar.

Genus INDALMUS.

Indalmus, Gerst., Mon. Endom. 1858, p. 185; Arrow, Trans. Ent. Soc. Lond. 1920, p. 21.

TYPE, *Eumorphus kirbyanus*, Latr.

Range. Asia and Africa.

Rather elongate in shape, with slender legs and antennæ, the 3rd joint of the latter about twice as long as the 4th, the 4th to the 8th gradually diminishing, the 9th to 11th forming a narrow, loosely-articulated and not much flattened club. Eyes prominent and coarsely faceted, moderately large. Occipital region provided with a broad stridulatory plate. Pronotum transverse, with a conspicuous stridulatory membrane in front, the front angles moderately prominent, the base margined, the basal foveæ rather long and deep. Front coxæ prominent and close together, the prosternum narrow and scarcely at all produced, the mesosternum rather long, angulated in front and emarginate behind, the metasternum produced into a small rounded lobe between the middle coxæ and with a narrow posterior marginal band, cleft in the middle behind and separated by a groove which is very obtusely angulate in the middle. Femora not club-shaped. Mandible sharply cleft at the tip, with the outer branch acutely produced. Maxilla with the inner lobe very small, the outer one broadly triangular, sharply pointed at the tip, the palpus long and blunt at the end. Ligula composed of two narrow oblique lobes; the palpi contiguous, very short and compact, the terminal joint transversely rectangular.

Sexual characters may be found in all the tibiæ in the male, and the 5th ventral segment may differ in shape in the two sexes.

Key to the Species of INDALMUS.

- 1 (10) Elytra oblong, without distinct flattened margins.
- 2 (7) Legs and antennæ long, with the femora rather stout: markings yellow.
- 3 (4) Pale marks transverse, undulating. *kirbyanus*, Latr., p. 324.
- 4 (3) Pale marks almost quadrate.
- 5 (6) Pronotum very feebly punctured; middle tibia of the male with a long tooth *latus*, sp. n., p. 325.

- 6 (5) Pronotum closely punctured;
middle tibia of the male with
a short tooth *distinctus*, Arrow, p. 326.
- 7 (2) Legs and antennæ not very long,
nor the femora very stout;
markings red
- 8 (9) Black, with four red spots *lachrymosus*, sp. n., p. 327.
- 9 (8) Black, with the head, prothorax
and shoulders of the elytra red. *indicus*, Gorh., p. 327.
- 10 (1) Elytra ovate, with distinct flat-
tened lateral margins *clavipes*, Arrow, p. 328.

Indalmus angusticollis, Gerst. (p. 329), which is unknown to me, is omitted from the above key.

278. *Indalmus kirbyanus*.

Eumorphus kirbyanus, Latr., Gen. Crust. et Insect. iii, 1807, p. 72.

Dapsa kirbyana, Latr., Cuvier's Règne Anim. 2nd ed. v, 1829, p. 159.

Indalmus kirbyanus, Gerst., Mon. Endom. 1858, p. 186.

Black and shining, each elytron decorated with two irregular



Fig. 58.—*Indalmus kirbyanus*, female; (a) front, (b) middle, tibia of male.

transverse yellow patches, the anterior one just behind the shoulders, reaching the outer but not the inner margin, sending a short branch almost to the basal margin and bidentate behind,

the posterior one not reaching the margins, toothed in the middle anteriorly and emarginate behind.

It is a rather narrowed-bodied insect, very shining above but moderately strongly punctured. The pronotum is transverse but rather long, the lateral margins are gently bisinuate, all the angles sharp, the base strongly margined and the foveæ deep and narrow, extending to the middle of the pronotum. The elytra are rather more strongly punctured than the pronotum, with the shoulders not prominent; they are of the same width from shoulder to shoulder as the base of the prothorax, with the sides gently curved from shoulder to apex, and the apices conjointly rounded. The club of the antenna is very narrow, joints 9 and 11 rather longer than wide, 10 slightly transverse.

♂. The front tibia is armed with a strong oblique tooth placed a little beyond the middle, the middle tibia is strongly incurved at the end and the 5th ventral segment is broadly and angularly excised behind.

Length, 6-6.5 mm.; *breadth*, 3-3.5 mm.

SIKKIM: Pedong, 4000 ft. (*R. W. G. Hingston*, July). BENGAL: Dacca (July); Buxa, Duars (May). ASSAM: Khasi Hills; Nongpow. BURMA: U. Chindwin (*C. R. Robbins*, Nov.). TENASSERIM (*Helper*). NILGIRI HILLS, 3000 ft. (*H. L. Andrewes*, Oct.)

Type unknown.

279. *Indalmus latus*, sp. nov.

Black and shining, each elytron decorated with two bright yellow patches, separated by an interval distinctly longer than the diameter of one of them. The anterior patch is subquadrate, placed just behind the shoulder and touching the lateral margin, the posterior one round, placed before the apex and equidistant from the inner and outer margins.

It is oblong in shape and very smooth and shining, with the legs long and the femora rather stout. The pronotum bears only a few minute scattered punctures, its lateral margins are bisinuate, the front and hind angles acutely produced, the base is rather broadly margined and the lateral foveæ are produced to the middle of the pronotum. The scutellum is smooth and very transverse. The elytra are finely, but fairly closely, punctured, gently dilating from the shoulders to beyond the middle and very narrowly margined. The antennæ are slender, the 1st joint strongly clavate, the 3rd as long as the 4th and 5th together and the last three forming a narrow club, of which the 9th joint is rather longer, and the 10th rather shorter, than wide and the terminal one obliquely truncate.

♂. The front tibia is armed with a very strong curved tooth at the middle of the inner edge and the middle tibia is strongly curved and gives rise at a third of the length of the inner edge to a very long slender appendage nearly one-third the length of the tibia, to which at a short distance from its base it runs

parallel. The last ventral segment is angularly emarginate behind.

Length, 6 mm.; *breadth*, 3 mm.

TENASSERIM: Meetan (*L. Fea*, April). SUMATRA: Medan (*J. B. Corporaal*, July, Sept.).

Type in the British Museum.

There are two specimens of this insect in the Prague Museum taken by Helfer in Tenasserim. The species almost agrees in its details with those of *I. angusticollis*, as described by Gerstaecker, but it is impossible to regard it as that insect, which has a narrow thorax and is said to be a little narrower in the body than *I. kirbyanus*, Latr., with the elytra as closely punctured. *I. latus* is very distinctly broader than that species, and the name employed by Gerstaecker could not have been applied to it; nor are the elytra as closely punctured.

280. *Indalmus distinctus*.

Indalmus distinctus, Arrow, Trans. Ent. Soc. Lond. 1922 (1923), p. 485.

Black and shining, each elytron decorated with two bright yellow patches of rather indefinite and irregular outline, the first subquadrate, placed just behind the base and touching the lateral margin, with its outer edge excised by a small black spot at the humeral angle, the second transversely oval, placed before the apex and equidistant from the inner and outer margins.

It is rather narrowly oblong in shape. The head is finely punctured, the pronotum more strongly, its sides bisinuate, the front and hind angles rather acutely produced, the base deeply margined and the lateral foveæ not quite reaching the middle. The scutellum is short and very transverse. The elytra are fairly closely and strongly punctured, with the shoulders not prominent and the sides narrowly margined. The prosternum is very narrow between the coxæ, the mesosternum bears a carina shaped like an inverted Y, enclosing a rounded tubercle between its arms, and the metasternum is smooth and shining. The abdomen is finely punctured. The antennæ are rather slender, the 1st and 3rd joints as long as the 4th and 5th together, and the last three forming a narrow club, the 9th a little longer and the 10th a little shorter than wide, the last obliquely truncate.

♂. The front tibia is armed with a very strong oblique tooth at the middle of its inner edge, the middle tibia has a short tooth just before the middle and is strongly curved from there to the extremity. The 5th ventral segment has a curvilinear emargination.

♀. The front tibiæ are straight, the middle ones distinctly and the hind ones feebly curved in their posterior half.

Length, 7-8 mm.; *breadth*, 3-4 mm.

BURMA: Toungoo (*G. Q. Corbett*); Karen Hills, Cheba 2700-3300 ft. (*L. Fea*). ASSAM: Khasi Hills; Nongpow; Sylhet, Chandkhira (*J. L. Sherwill*).

Type in the British Museum; co-types in the Genoa Museum and in Mr. O. E. Janson's collection.

Gorham confused this species with *I. angusticollis*, Gerst., the males of which have a long slender tooth upon the middle tibia, placed at a third of its length. In the present insect the tooth is very short, though obvious, and is placed near the middle. The emargination of the end of the abdomen in the same sex is not angular, as in Gerstaecker's species.

281. *Indalmus lachrymosus*, sp. nov.

Black and shining, with two small elongate-oval orange or red marks upon each elytron, placed in the middle line, the first a little beyond the base and the second a little before the apex.

Elongate-oval in shape, not very convex, with the legs and antennæ not very long. The upper surface is rather strongly and closely punctured. The pronotum is strongly transverse, a little less strongly punctured behind than in front; the raised lateral margins are rather broad, rounded in front, a little contracted behind, where they are straight and parallel; the front angles are bluntly prominent, the hind angles very slightly acute, the base straight and narrowly margined, the lateral foveæ very deep, nearly straight and parallel and extending a little past the middle and there is a faint median longitudinal groove, which is strongest where it joins the basal sulcus. The elytra are rather long and not very convex, dilating very slightly to beyond the middle, the sides are gently curved and the outer margins narrowly reflexed. The apical angles are sharp, not rounded. The metasternum is very smooth and shining and has a deeply cleft triangular plate in the middle of the hind margin. The abdomen is strongly punctured. All the joints of the antenna are elongate, except the penultimate one, which is about as wide as it is long, and the club is very little wider than the footstalk.

♂. The middle tibia is rather strongly incurved at the end, and the last sternite is acutely notched in the middle of the hind margin.

Length, 6-6.5 mm.; *breadth*, 3 mm.

CEYLON: Kalupahani, Haldummulle.

Type in the British Museum.

This is closely similar to *I. indicus*, but a little less elongate. The front angles of the prothorax are rather shorter, the lateral foveæ longer and the club of the antenna a little narrower.

282. *Indalmus indicus*.

Ancylopus indicus, Gorh.,* Trans. Ent. Soc. Lond. 1875, p. 312.

Brick-red, with the elytra, except the anterior part of the outer margin and a quadrate patch at the shoulder, black. The outer half of the femora, the tibiæ and the ventral surface of the abdomen, except at the sides, are also black, and the antennæ are rather dark in colour except at the base and the extreme tip.

Oblong in shape and not very convex, with moderately long antennæ and legs and not very stout femora. The surface is shining, but there is a clothing of grey sh setæ, extremely minute upon the greater part of the pronotum and elytra, but conspicuous and moderately close upon the head, antennæ, legs and lower surface. The pronotum is short and transverse, rather finely punctured upon the disc and very coarsely at the sides; the lateral margins are gently rounded in front, almost straight and parallel behind, the front angles prominent but not sharp, the hind angles slightly acute, the lateral foveæ linear, very deeply incised and reaching almost to the middle. The scutellum is smooth and almost semicircular. The elytra are strongly and closely punctured, with a juxta-sutural stria, the shoulders slightly prominent, the sides very feebly divergent to a little behind the middle and the lateral margins narrowly flattened. The prosternum is very narrow between the coxæ, the mesosternum is rather narrow and bifid behind, the metasternum bears scattered punctures and the abdomen is strongly and closely punctured beneath. The 3rd joint of the antenna is twice as long as the 4th, the 4th to 8th scarcely differ in length and the last three form a very feebly dilated club.

The male has a blunt internal tooth placed at two-thirds of the length of the front tibia from the base.

Length, 6-6.5 mm.; *breadth*, 2.5-3 mm.

UNITED PROVINCES: Kumaon, Haldwani Division, Nandbaur River (*H. G. Champion*).

Type in the British Museum.

One specimen taken by Mr. Champion has the whole upper surface pale, with the exception of a narrow oval black patch in the middle of each elytron.

283. *Indalmus clavipes*.

Indalmus clavipes, Arrow, Trans. Ent. Soc. Lond. 1920, p. 22.

Dark chestnut-brown, with a very slight purplish or metallic lustre upon the elytra, and each decorated with two bright yellow spots, the first transverse and constricted in the middle, placed just behind the shoulder and almost touching the outer margin, the second approximately round or oval, midway between the middle and the apex.

It is moderately elongate, smooth and shining, with slender legs and antennæ. The head and pronotum are almost unpunctured; the latter gently convex in the middle, broadly dilated and reflexed at the sides, with the lateral margins bisinuate, the front angles bluntly produced, the hind angles slightly acute, the basal and lateral foveæ deep, the latter reaching to the middle. The scutellum is strongly transverse and not angular. The elytra are oval, moderately convex, with very fine and inconspicuous punctures, a little wider at the shoulders than the base of the pronotum, the shoulders prominent and the lateral margins narrowly but

distinctly flattened. The lower surface is smooth and shining, the prosternal process narrow, blunt and not long, the meso- and meta-sterna with strongly raised anterior margins. The antennæ are rather slender, the 3rd joint as long as the 4th and 5th together, 4 to 8 progressively diminishing in length, 9, 10 and 11 forming a narrow and very loosely-articulated club, the last two joints produced on the inner side.

♂. The front tibia is a little dilated internally towards the extremity and slightly emarginate near the tip, the intermediate tibia is incurved at the extremity, where it is armed internally with a minute hooked process, and the posterior half of the hind tibia is fringed at the inner edge with yellow hair.

Length, 6 mm. : *breadth*, 3 mm.

S. INDIA : Nilgiri Hills, Karkur Ghat, 2000 ft. (*H. L. Andrews*, July).

Type in the British Museum.

284. *Indalmus angusticollis*.

Indalmus angusticollis, Gerst., Mon. Endom. 1858, p. 187.

"A little more slender than the preceding (i. e., *I. kirbyanus*), especially narrower in the pronotum, shining black like that species. The head is irregularly and sparsely punctured, the vertex not impressed, the forehead slightly convex, the antennæ pitchy-black, scarcely paler at the tip. The pronotum is a little broader than long, slightly dilated in an obtuse angle before the middle, with rather blunt front angles and almost acute hind angles, the latter produced a little outwards, the lateral margin distinctly thickened and raised, the lateral foveæ not reaching the middle, the disc convex, finely and not at all rugosely punctured, very shining. The scutellum is almost smooth. The elytra are as in the preceding species (*I. kirbyanus*), but more feebly dilated behind, distinctly broader at the base than the thorax, shortly rounded behind, as closely but more finely punctured, shining black, with two orange-red spots, of which the anterior, which is situated behind the shoulders and reaches the outer margin, appears roundly quadrate and the posterior more or less circular. Sometimes the former is slightly emarginate posteriorly and the latter anteriorly. The lower surface, including the legs, is blackish pitchy-brown, the coxæ and tarsi reddish. The sternum is smooth, the abdomen distinctly, and towards the sides more closely, punctured.

"In the male the antennæ are almost two-thirds the length of the body, with the last three joints rather more strongly dilated than in the female. The front tibiæ are armed at the middle of the inner edge with a long obliquely-placed slender and acute tooth, otherwise quite straight. The middle tibiæ on the other hand are strongly bent, distinctly dilated at the tip and send from the end of the first third a very long and slender peg-like process, more than one-third the length of the tibia and a little bent into an S shape; this process, as well as the inner edge of the tibia, is

fringed with hairs. The hind tibiæ are elongate, lightly sinuous in the apical half and also finely hairy at the inner edge. The last abdominal segment is slightly angularly emarginate at the tip.

"Length $2\frac{1}{2}$ –3 lines.

"From Burma, in Dohrn's collection."

I do not know this species.

Genus **ENCYMON**.

Encymon, Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 232; id., Mon. Endom. 1858, p. 134; Chap., Gen. Col. xii, 1876, p. 95.

TYPE, *Encymon violaceus*, Gerst.

Range. The Indo-Malayan, Papuan and Australian Regions.

Elongate in form, with very slender legs and antennæ, the elytra strongly rounded and convex and all the articulations very loose. Eyes very prominent, coarsely faceted. Antennæ with all the joints elongate except the 2nd and the last three, the latter transverse, forming a moderately broad, not very compact, club, the 3rd joint about as long as the 4th and 5th together. Pronotum rather broad in front and contracted behind, with the front angles prominent, the front margin obtusely angulate, with a conspicuous stridulatory membrane occupying the angle, the base nearly straight, with a deep marginal sulcus, and the basal foveæ strongly impressed. Scutellum broadly triangular. Elytra very convex, with the sides strongly rounded, the outer margins a little flattened and the shoulders moderately prominent and tumid. Front coxæ very prominent, very narrowly separated, the prosternum forming a small rounded knob behind, not extending beyond the coxæ. Mesosternum narrow between the coxæ, where it is elevated and sloping forwards. Metasternum narrowly elevated between the middle coxæ. Femora long and strongly clavate, very slender at the base. Tibiæ very slender. Tarsi strongly lobed.

Labrum broad and prominent. Mandible broad, with the apex produced, very acute and bifid. Maxilla with the outer lobe strongly dilated, the inner lobe short, the palpus with a long terminal joint. Ligula with narrow lateral lobes; labial palpus with a very broad, short and compressed terminal joint.

The sexes are scarcely differentiated externally. A minute tooth is sometimes present upon the front tibia of the male, but most of the species are without it.

This genus is distinguished by an exceptional slenderness of limb and looseness of the articulations, and most noticeably by the rotundity of its elytra.

Key to the Species of ENCYMON.

- | | |
|--------------------------------|------------------------------------|
| Pronotum opaque and sooty..... | <i>violaceus</i> , Gerst., p. 331. |
| Pronotum shining | <i>cinctipes</i> , Gorb., p. 332. |

285. *Encymon violaceus*.

Encymon violaceus, Gerst., Arch. f. Nat. xxiii, 1857, 1, p. 230;
id., Mon. Endom. 1858, p. 134.

Black, with the elytra dark coppery-purple.

Moderately elongate, with very long and slender legs and antennæ. The head is rather strongly punctured, not very shining, the clypeus separated by a very deep groove. The club of the antenna is moderately broad and all its joints are transverse, the remainder, except the 2nd joint, elongate. The pronotum is very finely coriaceous, opaque and sooty, with its basal margin smooth and shining; it is rather flat, narrow at

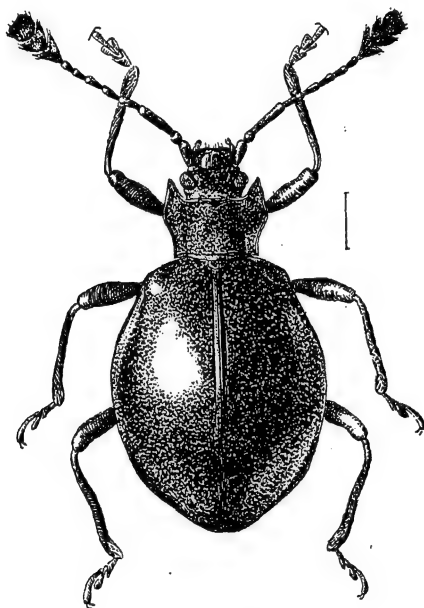


Fig. 59.—*Encymon violaceus*.

the base, with the sides strongly diverging to the front angles, which are strongly produced and acute, and bluntly but very distinctly angulate just before the middle; the base is straight, deeply and rather widely margined, with long deeply-impressed and parallel lateral foveæ, extending to the middle of the pronotum. The scutellum is transverse, smooth and shining. The elytra are very highly convex, extremely brilliant, moderately finely and closely punctured, with a deep stria adjoining the suture, strongly rounded, flattened outer margins and tumid and rather prominent shoulders. The metasternum is very minutely and sparsely

punctured and the abdomen densely and rather strongly, except at the sides, which are coriaceous. The femora are long but not bulbous towards the end, the middle tibiæ are a little incurved at the end and the hind tibiæ are gently bisinuate.

♂. The middle tibiæ are strongly incurved at the extremity and minutely toothed along the posterior half of the inner edge.

Length, 7.5–8 mm.; *breadth*, 4–5 mm.

BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.).

MALAY PENINSULA. JAVA. BORNEO. SUMATRA.

Type in the Berlin Museum; co-type in the Stettin Museum.

286. *Encymon cinctipes*.

Encymon cinctipes, Gorb.,* *Proc. Zool. Soc. Lond.* 1897, p. 459, pl. xxxii, fig. 4.

Black and shining, the femora encircled with bright orange-red bands a little before their outer extremities.

Rather narrowly elongate, with very long, slender legs and antennæ. The head is shining, finely punctured, the clypeus separated by a deep groove. The club of the antenna is not broad, the 9th joint not quite as broad as long, the joints of the footstalk, except the 2nd, very slender, the 3rd not quite as long as the 4th and 5th together. The pronotum is strongly transverse, very smooth and shining, almost unpunctured, completely margined, the basal margin broadest but not very broad. The disc is slightly convex, the sides flat, the lateral margins gently diverging from the base forwards and very obtusely angulate near the middle, the front angles strongly produced but blunt, the hind angles and the lateral foveæ short and divergent, extending less than a third the length of the pronotum. The scutellum is transverse, smooth and shining, and the clytra are moderately long, not extremely convex, shining, very finely and unevenly punctured, with a deep stria adjoining the suture, the shoulders very prominent, the lateral margins flattened and gently rounded. The metasternum is smooth and shining and the abdomen rather strongly punctured beneath. The middle and hind femora are bulbous towards the end and the tibiæ very slender.

♂. The 5th ventral segment is obtusely notched in the middle.

♀. The 5th ventral segment is nearly straight at its hinder margin.

Length, 7–8.5 mm.; *breadth*, 4.5 mm.

SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*, June).

N.E. FRONTIER: Abor Country, Rotung, 1400 ft. (*S. Kemp*, Dec.).

ASSAM (*Chennell*). BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

Dr. Stanley Kemp has recorded that this species "exudes drops of stinking fluid from the femora."

Genus **ANCYLOPUS.**

Ancylopus. Costa, Fauna del Regno di Napoli, Coleotteri, i, 1854, p. 14; Gerst., Mon. Endom. 1858, p. 188; Chap., Gen. Col. xii, 1876, p. 105; Arrow, Trans. Ent. Soc. Lond. 1920, p. 21.

TYPE, *Endomychus melanocephalus*, Oliv.

Range. From Southern Italy to South Africa and New Guinea.

Body oblong, rather parallel-sided and not very convex, smooth and shining above, the legs and abdomen clothed with very fine silky hair. Legs and antennæ rather slender, the 3rd joint of the latter longer than the 4th and 5th together, 4; 5 and 6 subequal, 7 shorter and stouter than 6, 8 markedly shorter and narrower than 7, 9 to 11 forming a very narrow but abrupt loosely-articulated club, the terminal joint oval. Eyes very prominent, coarsely faceted. Pronotum strongly transverse, broadly emarginate in front, with a broad and conspicuous stridulatory membrane; base with a deep marginal stria, the lateral foveæ narrow, deeply impressed and extending beyond the middle. Scutellum transverse and broadly rounded behind. Elytra rather long, with very narrow margins, and separately rounded at the apices. Front coxæ very prominent and contiguous; middle coxæ rather narrowly separated; hind coxæ widely separated. Mandible with the tip strongly produced and very acute, not toothed or cleft. Maxilla with the inner lobe very small, the outer one long, triangular, pointed at the end; palpus slender and blunt. Labium narrow, with the ligula composed of two narrow divergent lobes; the palpi contiguous, very short and compact, their terminal joint transversely rectangular.

In the male the front tibia bears a strong tooth at the middle of its inner edge, the middle tibia has a deep emargination beyond the middle, toothed at its anterior margin, and the hind tibia bears an irregular series of minute teeth along its inner edge, producing a saw-like appearance. The metasternum has a small shining tubercle on each side.

In the female the pronotum has a deep median sulcus and the anterior end of the lateral fovea on each side is connected with this by a deep curved oblique channel. Each elytron has a broad oblique depression extending from just behind the scutellum to beyond the middle.

This genus contains only a single known species, but this is a very abundant insect found throughout a large part of the world.

A small but very peculiar and characteristic feature is found in the slightly dilated 7th joint of the antenna, which is distinctly broader than those preceding and succeeding it. The deep transverse channel upon the pronotum of the female is another very peculiar feature.

287. *Ancylopus melanocephalus*.

Endomychus melanocephalus, Oliv., Entom. vi, 1808, p. 1073, no. 100, pl. i, fig. 3 (♀).

Ancylopus melanocephalus, Costa, Fauna del Regno di Napoli, Coleotteri, i, 1854, p. 14, pl. viii, fig. 3 (♂); Gerst., Mon. Endom. 1858, p. 190; Fiori, Bull. Soc. Ent. Ital. xviii, 1886, p. 414 (habits).

Var. *pictus*, Wied., Zool. Mag. ii, 1, 1823, p. 78; Gerst., Mon. Endom. 1858, p. 190.

Brick-red, with the head, legs, the basal margin of the elytra, the suture, except its apical extremity, a rectangular patch about

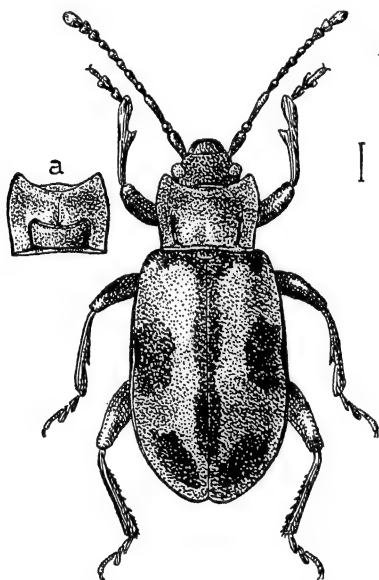


Fig. 60. — *Ancylopus melanocephalus*, male, and (a) pronotum of female.

the middle of the outer margin and an oval patch between the last and the apical angle, not quite reaching the margin, black.

Oblong, smooth and shining above. The head is rather strongly punctured, the pronotum a little more finely; the sides of the latter are gently bisinuate and contracted behind, with the front angles prominent but not acute and the hind angles right angles; the sides are flattened and the raised margins very narrow. The scutellum is smooth. The elytra are rather closely and evenly punctured. The metasternum is smooth and shining, the abdomen finely punctured and thinly clothed with minute silky hairs.

Length, 5–7 mm.; *breadth*, 2.5–3 mm.

HIMALAYAS: below Dosing, 1400 ft. (Abor Expedition, S.

Kemp, Jan.). BIHAR: Chapra. BENGAL: Rangamati, Chittagong Hill-tracts (*R. Hodgart*, July). UNITED PROVINCES: W. Almora, Kumaon (*H. G. Champion*, July, Feb.). NILGIRI HILLS (*G. F. Hampson*). BURMA: Ruby Mines (*W. Doherty*). CEYLON (*G. Lewis*). MALAY PENINSULA. TIBET. CHINA. JAPAN. NEW GUINEA. NIGERIA. TRANSVAAL. NATAL. S. ITALY. SICILY.

Type in the Paris Museum.

The lateral black patches of the elytra sometimes unite with the black sutural stripe, so that only four pale spots remain upon the elytra. On the other hand the sutural border and the posterior dark spots may be wanting, producing a pale variety with only two dark spots.

The enormous area of distribution of this species is very remarkable in a family in which there is a tendency to rather narrow localization. The only similar case amongst the ENDOMYCHIDÆ is *Trochoideus desjardinsi*. Probably the feeding-habits of these two insects are much less specialized than usual. *A. melanocephalus*, according to Prof. Fiori, who found it in great abundance in Calabria, feeds upon decaying vegetable matter in marshy places and congregates in large colonies under bark in the winter.

Genus DAPSA.

Dapsa, Latr., Cuvier's Règne Anim. 2nd ed. v, 1829, p. 159; Gerst., Mon. Endom. 1858, p. 196; Chap., Gen. Col. xii, 1876, p. 106.

TYPE, *Endomychus denticollis*, Germ. (Europe).

RANGE. The Mediterranean Region, Northern and Western Asia, North India and Burma.

Rather elongate, not very convex, entirely but not densely clothed with short hair. Antennæ very long, slender and loosely-articulated, all the joints but the penultimate one elongate, the first three sometimes a little thickened, 3 considerably longer than 4, 8 a little smaller than 7 or 9, club indistinct, very little wider than the footstalk, joints 9 and 10 feebly dilated, 11 oval. Eyes rather small, coarsely faceted, prominent and far apart. Pronotum varying greatly in shape, but generally with prominent, sometimes very acute, angles, its front margin furnished with a conspicuous stridulatory membrane; base narrowly margined, with deeply-impressed lateral foveæ. Scutellum transverse. Elytra elongate, with the shoulders slightly prominent, not tumid, the sides curvilinear and the apices conjointly rounded. Prosternum not elevated nor produced. Front coxæ very prominent, contiguous. Mesosternum carinate anteriorly, the carina bifurcate behind. Middle coxæ closely approximated, separated by narrow processes of mesosternum and metasternum. Metasternum not margined in front. Legs rather long. All the femora long and clavate, slender at the base. Tibiæ simple. Tarsi strongly lobed, not broad. Mandible short, with long, acutely pointed tip. Lobes of the maxilla pointed, palpus slender, the

terminal joint pointed. Ligula bilobed, the lobes scarcely produced outwards; the labial palpi not very close together, the last joint slightly elongate, truncate at the end.

The tibiæ of the front and middle pairs of legs are subject to modification in the males.

All the species are characterized by dull brown colouring and strong and coarse puncturation. Two species of this genus were discovered by Leonardo Fea in Burma, a very unexpected habitat for a genus otherwise Palæarctic in its range.

I have cited *D. denticollis*, Germ. (1817), as the type of this genus because, although not mentioned by Latreille, that was the actual published name of one of the two species contained in the catalogue referred to by him.

Key to the Species of DAPSA.

- | | |
|--|---|
| 1 (4) Anterior angles of the prothorax produced outwards. | |
| 2 (3) Pronotum strongly punctured | <i>sculpturata</i> , Gorb., p. 336. |
| 3 (2) Pronotum finely and closely punctured. | <i>celata</i> , sp. n., p. 337. |
| 4 (1) Anterior angles of the prothorax produced forwards | [p. 337.
<i>trogositoides</i> , Gorb., |

288. *Dapsa sculpturata*.

Dapsa sculpturata, Gorb.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 299.

Reddish-brown, with the sutural margins of the elytra and a drop-shaped spot on each, beyond the middle, black, and entirely clothed with moderately long, not very close-lying, greyish-yellow hair above and beneath.

Rather narrowly elongate, with moderately slender legs. The entire upper surface is strongly and rather closely punctured. The pronotum is a little broader than long, with the upper surface uneven, the front margin straight, with a deep sharply-defined excision for the stridulatory membrane, the sides slightly converging from the front backwards, nearly straight but obtusely prominent before the middle, the front angles produced outwards but not long nor sharp, the hind angles sharp and rectangular, the base finely margined, the marginal groove ending in a minute deep punctiform fovea on each side. The scutellum is semicircular and almost smooth. The elytra are rather less coarsely and closely punctured than the pronotum, with the shoulders not very prominent, the sides nearly parallel to beyond the middle, and the apices rounded. The antennæ are very slender, the basal joint long, the 2nd and 4th joints of equal length, the 3rd distinctly longer than these but shorter than the 1st, the 4th to 9th distinctly elongate and the club feebly defined. The legs, and especially the hindmost pair, are long and slender, the femora very strongly and closely punctured. The metasternum and abdomen are sparsely punctured and pubescent.

♂. The middle tibiae are strongly curved posteriorly.

Length, 4 mm.; *breadth*, 1.5 mm.

BURMA: Bhamo (*L. Fea*, Aug.); Teinzo (*L. Fea*, May); Karen Hills, Asciuii Ghecu (*L. Fea*, March, April).

Type in the Genoa Museum.

The black elytral spot is liable to disappear.

289. *Dapsa celata*, sp. nov.

Chocolate-brown, with a vaguely triangular black patch upon each elytron beyond the middle, and entirely clothed with rather close-lying but not dense grey hair.

Rather short and convex, with slender legs and antennæ. The head is finely punctured, with the eyes large and prominent. The pronotum is transverse, closely and finely punctured, with the front margin broad, strongly excised in the middle for the stridulatory membrane, the lateral margins strongly and curvilinearly contracted from one-third of their length to the hind angles, which are acute, the front angles produced outwards, the base finely margined and the marginal stria ending in a deep punctiform fovea on each side. The scutellum is semicircular. The elytra are short, finely and not very closely punctured, with the shoulders prominent, the sides rather parallel and the apices rounded. All the joints of the antenna are strongly elongate except the penultimate one, the 1st and 3rd of equal length and longer than the rest, the last oval and the club scarcely defined. The metasternum is very finely and sparsely punctured and the abdomen rather more strongly.

♂. The front tibia bears a sharp spine at two-thirds the length of its inner edge, which is closely fringed from that point to the extremity. The 5th ventral sternite is broad, with its hinder margin a little deflected on each side, and the 6th sternite is exposed.

Length, 4 mm.; *breadth*, 2 mm.

DARJEELING: Pashok, 2000 ft. (June).

Type in the British Museum.

I have seen only a single male.

290. *Dapsa trogositoides*.

Dapsa trogositoides, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 300.

Reddish-tawny, with the sutural margins of the elytra darker and clothed with grey hair above and beneath.

Very narrowly elongate and a little depressed. The whole upper surface is strongly and rather closely punctured. The pronotum is distinctly transverse, broad in front and strongly contracted behind, with the sides bisinuate, the front angles strongly produced forward and rounded and the hind angles acutely produced obliquely, the base narrowly margined, the

marginal groove terminating in a strongly-impressed lateral fovea on each side. The scutellum is strongly transverse and nearly smooth. The elytra are very long and narrow, tapering from before the middle to the apices; the shoulders are not very prominent. The antennæ are less slender than those of *D. sculpturata*, the basal joint not longer than the 3rd, the latter nearly twice as long as the 2nd or 4th, the 4th to 8th only slightly elongate and the club feebly defined. The lower surface

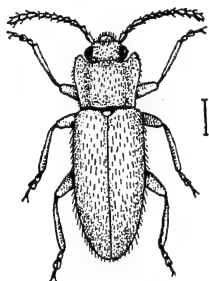


Fig. 61.—*Dapsa trogositoides*.

is scantily and rather indefinitely punctured and thinly clothed with hair. The 5th sternite is longer than the three preceding it and more closely hairy. The legs are long and slender, especially the hindmost pair.

Length, 4.5 mm.; *breadth*, 2 mm.

BURMA: Karen Hills, Asciuii-Cheba, 3600–4000 ft. (*L. Fva*, Mar.).

Type in the Genoa Museum; co-type in M. René Oberthür's collection.

Only two specimens of uncertain sex are known.

Genus PSEUDINDALMUS.

Pseudindalmus, Arrow, Ann. Mag. Nat. Hist. (9) v, 1920, p. 330.

TYPE, *Pseudindalmus tonkinensis*, Arrow (Tonkin).

Range. The Indo-Malayan Region.

Oblong in shape, not highly convex, smooth. Legs not very slender, the femora a little clavate. Pronotum transverse, with a stridulatory membrane at the front margin, the lateral margins thickened and the base strongly margined. Elytra conjointly rounded behind, with narrow flattened lateral margins. Prosternum produced, rather flattened and truncate behind. Mesosternum narrowed in front, a little excavated. Antenna not very slender, with the 2nd joint globular, the 3rd to 8th subequal, slightly decreasing, the last three forming a well-defined club, transverse, produced inwards, the terminal one truncate at the tip. Mandible broad, minutely bifid at the tip. Outer lobe of the

maxilla broad; palpus long and acuminate. Submentum strongly transversely carinate; labial palpi very short, with the last joint broadly cup-shaped.

♂. The 9th joint of the antenna is swollen and larger than the 10th.

In addition to the type-species from Tonkin and that here described, one is known from North Borneo and one from Singapore.

291. *Pseudindalmus andamanicus*.

Pseudindalmus andamanicus, Arrow, Trans. Ent. Soc. Lond. 1920, p. 33.

Yellow or reddish, with the upper surface black, except the outer margins, and sometimes only the front angles, of the

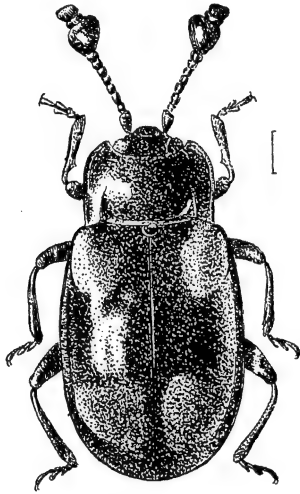


Fig. 62.—*Pseudindalmus andamanicus*, male.

pronotum and two large subquadrate yellow or red patches upon each elytron, the anterior patch reaching the front and lateral margins at the shoulder and the posterior one equidistant from the inner and outer margins.

Oblong in shape, not very convex, but very smooth and shining above. The pronotum is minutely punctured, its lateral margins are rather thickened, gently rounded in front and nearly straight and parallel behind, the front angles rather acute, the hind angles rectangular, the base rather broadly margined and the lateral foveæ not quite reaching the middle. The elytra are more strongly, closely and evenly punctured, with the outer margins feebly rounded and rather narrowly flattened, the widest part near

the middle. The antennæ are rather short, stout and compact. The mesosternum is smooth, trapezoidal and slightly hollowed, and the metasternum and abdomen are distinctly but not closely punctured.

♂. The 9th joint of the antenna is swollen and larger than the two following joints together. The front trochanters are produced into rather long sharp spines, the front femur has a minute tooth near the base and the front tibia is bluntly toothed beyond the base.

Length, 5–6 mm.; *breadth*, 3 mm.

ANDAMAN ISLANDS (*Roepstorff*).

Type in the British Museum.

Genus MYCETINA.

Mycetina, Muls., Hist. Nat. Col. France, Sulcicolles, 1846, p. 15; Gerst., Mon. Endom. 1858, p. 226; Chap., Gen. Col. xii, 1876, p. 117.

TYPE, *Chrysomela cruciata*, Schall. (Europe).

Range. Europe, Asia, Africa, N. America.

Broad and compact in form and generally very smooth and shining. Antennæ stout, closely articulated, not very long, flattened and gradually widened to the end, which is obliquely truncate, but without a sharply defined club, 2nd joint small and globular, 3rd to 8th gradually diminishing in length, the 3rd distinctly longer than the 2nd, but very little longer than the 4th, the 10th and 11th generally transverse. Eyes prominent. Pronotum short, with the sides flattened, the lateral margins elevated, the front margin deeply excised, with a stridulatory membrane in the middle, the base margined and the lateral foveæ deep. Elytra broad at the shoulders, with narrow flattened margins. Prosternum produced behind as a rounded lobe, not very narrow. Mesosternum rather narrow. Metasternum margined in front. Hind coxæ widely separated. Legs not very slender. Femora a little clubbed. Tibiæ simple. Tarsi strongly lobed but not broad. Mandible short, with the tip very acutely pointed and a blunt inner tooth at a short distance from it. Inner lobe of the maxilla short, outer lobe long, triangular and acuminate; palpus short and fusiform. Ligula with long and narrow diverging lobes; labial palpus very short, with the last joint cup-shaped.

In most of the species the sexes scarcely differ externally, but in a few some or all of the legs exhibit modifications in the male.

Key to the Species of MYCETINA.

- 1 (10) Very smooth.
- 2 (3) Black, with four yellow spots .. *tetrasticta*, Arrow, p. 341.
- 3 (2) Reddish, without spots.
- 4 (5) Legs dark, with pale tarsi *montivaga*, Csiki, p. 341.
- 5 (4) Legs entirely pale.

- 6 (9) Last joint of the antenna not much larger than the preceding joint.
- 7 (8) Basal margin of the pronotum narrow, foveæ short *pallida*, Arrow, p. 343.
- 8 (7) Basal margin of the pronotum not very narrow, foveæ long and deep *nebulosa*, Arrow, p. 343.
- 9 (6) Last joint of the antenna much larger than the preceding joint. *pusilla*, Arrow, p. 344.
- 10 (1) Hairy *castanea*, Gerst., p. 345.

292. *Mycetina tetrasticta*.

Mycetina tetrasticta, Arrow, Trans. Ent. Soc. Lond. 1920, p. 26.

Black and shining, with the head, the front angles of the pronotum, the abdomen and the tarsi reddish, and each elytron decorated with two pale yellow spots, the 1st subquadrate in shape, placed a little behind the shoulder and nearly reaching the outer margin, the 2nd a little smaller, transversely oval and placed before the apex.

It is rather broad, oblong-ovate and not very convex. The disc of the pronotum is minutely and sparingly punctured, the sides coarsely and closely punctured and finely setose, with the lateral margins rounded in front and straight and parallel behind, the front angles bluntly produced, the hind angles slightly acute, the base deeply sulcate and the lateral foveæ straight, parallel and not quite reaching the middle. The elytra are rather strongly punctured, with their outer edges a little flattened, the apices rounded and not angulate. The antennæ are moderately compact, with joints 1, 3, 4 and 5 slightly elongate, the last three transverse, forming a well-defined oblong club, the terminal joint very short. The prosternum is rather narrow, bluntly pointed behind, and the metasternum and abdomen are densely punctured and clothed with very fine silky hair. The legs are rather slender and the hind femora strongly clavate.

Length, 4 mm.; *breadth*, 2.5 mm.

ASSAM: Patkai Hills (*W. Doherty*).

Type in the British Museum.

The only two known specimens of this species appear to be females.

293. *Mycetina montivaga*.

Mycetina montivaga, Csiki, Termesz. Füzetek, xxiii, 1900, p. 401.

Reddish-chestnut, with the antennæ (three or four basal joint sometimes excepted), the femora and tibiæ black.

Of short oblong form, not very convex, smooth and shining. The eyes are very prominent but not large, the forehead broad, very smooth and shining, with a very few minute punctures. The pronotum is short, shining and almost devoid of punctures, with the lateral margins well rounded in front, straight and a little

divergent behind, the front angles very bluntly produced, the hind angles slightly acute, the base feebly rounded and narrowly margined, the lateral foveæ not very deep or long. The elytra are finely and irregularly punctured, with narrow margins and prominent shoulders coinciding with the hind angles of the pronotum. The antennæ are moderately long, with a moderately broad, vaguely limited club, the last five joints transverse. The lower surface, legs and antennæ are clothed with fine grey hair. The prosternal process is rather long and oval, with its sides sharply elevated. The mesosternum is hollowed between the

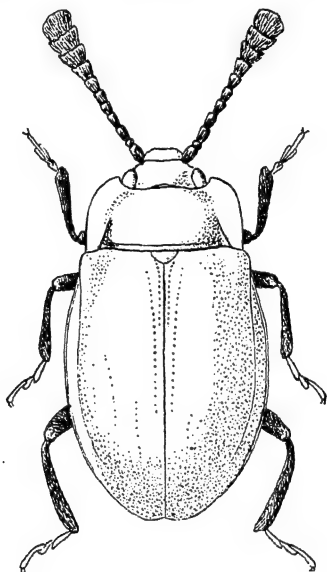


Fig. 63.—*Mycetina montivaga*.

middle coxæ and is also bordered by lateral carinæ which converge to a sharp point in front.

♂. Of rather shorter form, with shorter, more compact and broader antennæ, and the last ventral segment gently excised at its hinder margin.

♀. The last ventral segment is pointed behind.

Length, 3–4 mm.; breadth, 2–2.5 mm.

SIKKIM: Darjeeling, 7000 ft. (*J. T. Jenkins*, Aug.). ASSAM: Khasi Hills, Shillong, 5500–6400 ft. (*S. Kemp*, Aug., Sept.). UNITED PROVINCES: Western Almora, Kumaon (*H. G. Champion*); Bhowali (*C. F. C. Beeson*, Aug.); Simla Hills, Kotgarh, 7000 ft., Fagu, 8000 ft. (*S. N. Chatterjee*, Sept.). PUNJAB: Kangra District, Kulu, 7000 ft. (*O. H. Walters*, Aug.).

Type in the Hungarian National Museum.

Found on Chir pine (*Pinus longifolia*) by Dr. C. F. C. Beeson.

294. *Mycetina pallida*.

Mycetina pallida, Arrow, Trans. Ent. Soc. Lond. 1920, p. 32.

Reddish-testaceous, with the legs and lower surface, and generally also the sides of the pronotum and elytra rather indefinitely, yellow; the antennæ black, with the basal joint (and sometimes the second also) testaceous.

Very broadly and compactly ovate, not very convex, extremely smooth and shining. The head is shining, with the forehead broad and very finely and sparingly punctured. The pronotum is very short and broad, scarcely visibly punctured, with the sides strongly rounded in front, straight and parallel behind, the front angles bluntly produced, the hind angles rectangular, the basal margin straight, with a deep sulcus close to and parallel with the base, and the lateral foveæ deep but not prolonged anteriorly. The elytra are short, not very convex, distinctly and rather uniformly punctured, with distinct flattened margins, the shoulders prominent and coinciding with the hind angles of the prothorax. The antennæ are rather short, very compact, with the club broad but undefined, the last four joints transverse.

Length, 3 mm.; *breadth*, 2 mm.

TENASSERIM: Tavoy (*W. Doherty*).

Type in the British Museum.

295. *Mycetina nebulosa*.

Mycetina nebulosa, Arrow, Trans. Ent. Soc. Lond. 1920, p. 33.

Reddish-testaceous, with the legs and lower surface yellow, the sides of the pronotum, the shoulders and apices of the elytra more or less vaguely pale, and the base of the pronotum and the disc of each elytron more or less darkened; the antennæ black, with the three basal joints red.

It is broadly and compactly ovate, rather convex and extremely smooth and shining. The head is smooth, with the forehead about as wide as the combined radius of the eyes and very finely and sparingly punctured. The pronotum is very short and broad, very minutely and scantily punctured, with the lateral margins rounded in front, nearly straight behind and slightly divergent at the base, the anterior angles bluntly produced and the hind angles acute, the basal margin rounded, with a deep straight sulcus not parallel to the edge, the lateral foveæ deep and produced forward to the middle of the pronotum. The elytra are short, convex, finely but rather uniformly punctured, with distinct flattened margins, the shoulders prominent and coinciding with the hind angles of the prothorax. The antennæ are short and thick, with the club broad but indefinite, the last six joints transverse.

♂. The eyes are larger and closer together than in the female and the antennæ are a little shorter and broader.

Length, 2.5 mm.; *breadth*, 1.75 mm.

TENASSERIM: Tavoy (*W. Doherty*). SIAM.

Type in the British Museum.

M. nebulosa has a very great superficial resemblance to *M. pallida*, especially pale individuals in which the dark areas of pronotum and elytra are not well developed. It is a more convex species, with larger eyes, narrower forehead, shorter and broader antennæ, the basal margin of the prothorax rounded and not parallel to the deep basal sulcus, and its hind angles a little produced and acuminate.

296. *Mycetina pusilla*.

Mycetina pusilla, Arrow, Trans. Ent. Soc. Lond. 1920, p. 31.

Reddish-testaceous, with the legs and lower surface yellow and the sides of the pronotum and the apices of the elytra also vaguely paler than the remaining surface, the antennæ black, with the two basal joints reddish.

It is minute, ovate, convex, and very smooth and shining. The pronotum is moderately transverse, with scarcely perceptible punctures, except a few near the hind angles, the lateral margins rounded in front, nearly straight and a little convergent behind, the front angles prominent but rounded, the hind angles almost right angles, the base deeply sulcate, and the lateral foveæ reaching the middle anteriorly and exhibiting very deep transversely lenticular orifices at the base. The elytra are short, convex, rounded at the sides and minutely and sparingly punctured. The antennæ are slender and not very closely articulated, with the 2nd joint very short, the 3rd and 4th slightly elongate, the rest short, the terminal joint very large and obliquely oval. The legs are moderately slender.

Length, 2·5 mm.; *breadth*, 1·5 mm.

TENASSERIM: Tavoy (*W. Doherty*). TONKIN: Bao-Ha (*H. Stevens*, Dec.).

Type in the British Museum.

This insect closely resembles *M. pallida* and is exactly the same in colour, but it is a little smaller and more gracefully shaped, the pronotum being relatively a little longer, the sides more strongly rounded in front and more contracted behind, the elytra shorter, more convex and more oval in outline and a little less strongly punctured. The antennæ are more slender, with the joints not closely articulated, the club not much dilated, but the terminal joint considerably larger than the rest.

This species was taken by Mr. Stevens "in dense Bamboo forest, the only undergrowth consisting of two species of ground-palm (*Caladium*). When at rest these insects take up a position in a straight line along the midrib of the large leaf, on the under side, of this ground-palm, where I counted from 43 to 46. They readily disperse and take to flight when disturbed."

297. *Mycetina castanea*.

Mycetina castanea, Gerst., Mon. Endom. 1858, p. 233; Arrow, Trans. Ent. Soc. Lond. 1920, p. 25.

Mycetina candens, Gorh.,* Trans. Ent. Soc. Lond. 1874, p. 441.

Reddish-chestnut, with the antennæ blackish towards, but not including, the tips, which are yellowish, and entirely clothed above with a rather close, erect golden pubescence.

Broadly oblong-ovate, moderately convex and rather shining above. The disc of the pronotum is very finely and rather sparingly punctured, the sides more closely, the lateral margins are strongly reflexed, well rounded in front, straight and parallel behind, the front angles produced but blunt and the hind angles very slightly acuminate; the base is gently rounded and deeply sulcate near the margin, and the lateral foveæ are deep, parallel and reach almost to the middle. The elytra are broader at the base than the pronotum, but the shoulders are only moderately prominent; the entire surface is finely and closely punctured and the sides are narrowly margined. The antennæ are rather long, not conspicuously dilated towards the end, with a rather narrow club, joint 2 is very short, 3 and 4 are distinctly elongate, 5, 6 and 7 slightly elongate, 8 and 9 about as long as broad, 10 and 11 strongly transverse. The legs are rather long and slender.

♂. The hind tibiæ are slightly curved.

Length, 4-4.5 mm.; breadth, 2.5-3 mm.

CEYLON: Kalupahani, Haldunmulle; Dikoya (Lewis, Dec., Jan.).

Type of Gerstaecker in the Berlin Museum; that of Gorham in M. René Oberthür's collection.

The hairy clothing of this isolated species, as well as the colouring, give it a striking resemblance to the Ceylonese species of *Stenotarsus*, in whose company it appears to be found.

The specimen taken by Mr. Lewis, to which I referred in 1920 as Gorham's type of *M. candens*, was so labelled by himself but incorrectly, having been captured seven years after the date of his description.

Division BECCARIINI.

It is necessary to make a separate division of the subfamily for the single genus *Beccaria*, on account of several peculiar features which exclude it from close relationship with any other known genus. The structure of its mouth-parts, especially of the labium and its palpi, show that, in spite of its hemispherical shape, its relationship to the EUMORPHINI is not very remote, and the occurrence of a stridulatory file upon the head points to the same conclusion. But, unlike all the EUMORPHINI, it is quite destitute of the characteristic prothoracic membrane which elsewhere invariably accompanies and indicates the presence of the stridulating apparatus. Again, the extreme shortness of the prosternum and the projection of the mesosternum between the front coxæ are entirely peculiar features.

Genus **BECCARIA.**

Beccaria, Gorb., Ann. Mus. Civ. Genova, xxii, 1885, p. 521.

TYPE, *Beccaria papuensis*, Gorb. (New Guinea).

RANGE. The Indo-Malayan Region.

Hemispherical, uniformly convex, smooth, shining and Coccinellid-like, with short legs and antennæ. The head is rather small and sunk into the prothorax, the eyes narrowly transverse and approximating on the top of the head. Vertex with a broadly triangular stridulatory file. Antennæ slender, but short, the 1st joint elongate, 2nd to 8th subequal in length, but the 3rd sometimes distinctly but not greatly longer, 9th to 11th forming a loosely-jointed, flattened but not wide club. Mandible short, with the tip acute, not much produced, with a slight basal tooth. Maxilla with the outer lobe broad, the inner one narrow, and the palpus stout, with the terminal joint pointed. Ligula with strongly-produced lateral lobes; the palpi stout, close together at the base, with the terminal joint very short and cupuliform. Pronotum very finely margined at the front, sides and base, with rather feeble basal foveæ, the front margin narrowly excised for the reception of the head. Scutellum triangular. Front coxæ rather widely separated, the prosternum extremely short, angularly excised behind and not produced beyond the coxæ. Mesosternum transverse, rather broad, produced into a short point in front, corresponding with the emargination of the prosternum. Metasternum moderately long. Abdomen with five visible ventral segments, the 1st as long as the succeeding three together, the 5th short and rounded behind. Legs simple; trochanters short, femora a little thickened, tibiæ slender, tarsi lobed, the soles not very broad.

Only two Indian species are known. All the members of the genus have a strong resemblance to COCCINELLIDÆ, for which no doubt they are commonly mistaken. The antennæ, although short, are much longer than those of any COCCINELLIDÆ. The species of the genus, although fairly numerous, have generally been represented hitherto only by single specimens, and nothing is known of their habits. One of the Indian species has been found upon Coffee.

Key to the Species of BECCARIA.

Black, with red markings on the elytra *cardoni*, Gorb., p. 346.
Pale-coloured, with black margins to the elytra. *pallida*, Arrow, p. 347.

298. ***Beccaria cardoni*.**

Beccaria cardoni, Gorb.,* Proc. Zool. Soc. Lond. 1897, p. 464, pl. xxxii, fig. 8.

Black, each elytron decorated with an orange-coloured humeral lunule, extending from the basal to the lateral margin, forming

two small incomplete circles and emitting five short tooth-like processes externally and a narrow transverse subapical fascia with its anterior margin three times, and its posterior margin twice, excised.

Hemispherical, very convex and moderately smooth and shining, with short but slender legs and antennæ. The pronotum is two and a half times as wide as its length in the middle, rather strongly and closely punctured, especially at the sides, very narrowly margined all round, with the lateral margins gently rounded and strongly converging, the front angles sharp and rectangular, the hind angles slightly acute, the base gently trisinate and the foveæ very short and inconspicuous. The elytra are rather more strongly but less closely punctured, entirely and evenly rounded at the sides, with narrowly flattened margins and almost obsolete shoulders. The metasternum is very coarsely, but not closely, punctured and the abdomen is clothed with very fine grey recumbent setæ, the basal sternite strongly and unequally, and the remainder finely and closely, punctured. The antennæ are rather slender but not long, the 1st joint clavate, the 2nd, 4th and 5th slightly elongate, the 3rd twice as long as those adjoining it, the 6th short, the 7th and 8th short, but much thicker than those preceding, and the last three forming a very loosely-articulated club, of which joints 9 and 10 are strongly transverse and the terminal one oval.

♂. The basal ventral segment has a slight tubercle in the middle of its hind margin and the terminal segment is feebly emarginate in the middle.

Length, 7 mm.; *breadth*, 6 mm.

BENGAL: Barway (*Père Cardon*). MYSORE: Coorg, Sanivarsandai (*T. V. Ramakrishna*, April).

Type in M. René Oberthür's collection.

I have received from the Coimbatore Museum several specimens which were taken upon Coffee in a plantation at Sanivarsandai.

299. *Beccaria pallida*.

Beccaria pallida, Arrow, Trans. Ent. Soc. Lond. 1922 (1923), p. 488.

Pale testaceous-yellow, with the last four or five joints of the antenna and a narrow border encircling the conjoined elytra black. This border does not include the scutellum, but extends a little way down the suture behind it, and at the posterior end of the elytra it dilates into a broad subapical patch, the extreme apices being pale.

The body is very broadly oval, almost hemispherical and very smooth and shining above, the puncturation being fine and sparse. The head is finely pubescent. The pronotum is very broad, lightly punctured, with its sides straight and very divergent behind, feebly rounded in front, the front angles produced but not very sharp, the hind angles rather acute, the base feebly trisinate,

not distinctly margined, the lateral foveæ well marked. The elytra are distinctly but sparingly and unevenly punctured. The lower surface is clothed with fine silky hair, and the metasternum has in the middle a large cluster of coarse, evenly distributed punctures. The antennæ are very slender but relatively very short, the length being considerably less than the width of the

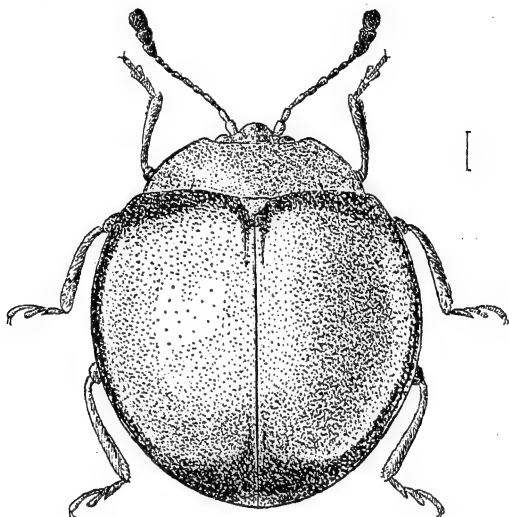


Fig. 64.—*Beccaria pallida*.

pronotum at the base; the 3rd joint is decidedly longer than the rest.

Length, 5·5 mm.; *breadth*, 4·5 mm.

N. MALABAR: Taliparamba (*P. S. Nathan*, July or August).

Type in the British Museum.

This is unique, a single specimen having been received from Mr. E. Ballard.

Division ENDOMYCHINI.

Form variable, upper surface without hair. Third joint of the antenna little longer than joints 2 and 4. Mandible stout, bifid at the tip. Lobes of the maxilla stout, fitting closely together and not thickly fringed, the inner one acuminate. Ligula elongate, without lateral processes, the labial palpi more or less pointed at the end. Pronotum without stridulatory membrane. Front coxæ rather widely separated, the prosternum broadly produced behind. Legs simple, similar in both sexes. Tarsi quasi-3-jointed, lobed. Abdomen consisting of six segments beneath, the first long.

This group, although its essential anatomical features are well defined and constant, is remarkable for a curiously wide range of variation in external form. The body may be of simple oval shape, narrowly elongate, very short and broad or even hemispherical. The antennæ may be very slender or rather stout, the club extremely broad and flat or scarcely dilated at all; and yet so superficial are these apparently profound differences that the genera are few and those not very sharply defined. There is a marked resemblance of many species in their form and coloration to some of the genera of EUMORPHINI, from which they are easily distinguished by the absence of the stridulating apparatus and the short 3rd joint of the antenna. Another important difference is the absence of the external male characters so characteristic of the EUMORPHINI. In certain species of *Eucteanus*, however, a remarkable male feature is found in the very sharp ridge running the entire length of the abdomen on each side.

Key to the Genera of ENDOMYCHINI.

- 1 (4) Not hemispherical; club of the antenna very asymmetrical.
- 2 (3) Club of the antenna very flat EUCTEANUS, Gerst., p. 349.
- 3 (2) Club of the antenna scarcely flattened. ENDOMYCHUS, Panz.,
- 4 (1) Hemispherical; club of the antenna almost symmetrical, very narrow ... CYCLOTOMA, Muls., p. 359. [p. 357.]

Genus EUCTEANUS.

Eucteanus, Gerst., Archiv f. Nat. xxiii, 1857, 1, p. 239; id., Mon. Endom. 1858, p. 356; Chap., Gen. Col. xii, 1876, p. 131; Arrow, Trans. Ent. Soc. Lond. 1920, p. 66.

Homalosternus, Guér., Rev. Mag. Zool. (2) ix, 1857, p. 581.

TYPE, *Eucteanus caelestinus*, Gerst.

Range. Northern India and Burma.

Narrowly elongate, moderately elongate, or rather short and broad, with very convex elytra and slender legs and antennæ. The 2nd joint of the antennæ elongate but short, the 3rd to 8th elongate but regularly decreasing in length, the 9th to 11th forming a very flat pear-shaped club. Femora and tibiæ slender and simple; tarsi rather broadly dilated, the last joint very slender. The front coxæ are divided by a broad, flat prosternal process, gently rounded behind; the mesosternum is of similar width, sloping in front, not definitely ridged where it meets the prosternum, and the metasternum has a narrow, elevated anterior margin. The eyes are rather small and not very coarsely faceted. The pronotum is rather flat, with the basal groove and lateral foveæ obsolete, the front angles acutely produced, the hind angles sharp but not produced. Scutellum transverse, rounded behind. Elytra more or less carinate and prominent at the shoulders, a little produced behind and rounded at the apical angles. Abdomen consisting of

six visible segments beneath, the 6th retractile. Mandible short and stout, acutely bifid at the tip. Lobes of the maxilla short and of equal length, the outer one scarcely dilated at the end; palpus very long and stout, not pointed at the tip. Labium minute, elongate, not excised nor appreciably dilated in front; palpi very short, not far apart at the base, with the terminal joint oval.

The genus consists of two very well-marked divisions, the first and typical one composed of species of elongate shape, in which the sexes are strongly differentiated, the males having the abdomen hollowed out beneath and the sides of the cavity elevated into very strong sharp-edged crests. The remaining species are short and broad in shape and the sexes are alike. The shape of the antennal club is as remarkable for its variation according to the species as is the elytral pattern for its constancy.

Key to the Species of EUCTEANUS.

- | | |
|--|-------------------------------------|
| 1 (12) Elongate in shape; middle of the abdomen of the male flattened or hollowed beneath. | |
| 2 (7) Elytra opaque. | |
| 3 (6) Club of the antenna not very broad. | |
| 4 (5) Sides of the prothorax strongly rounded | <i>hardwickei</i> , Hope, p. 350. |
| 5 (4) Sides of the prothorax not strongly rounded | <i>mussuricus</i> , sp. n., p. 352. |
| 6 (3) Club of the antenna very broad.... | <i>celestinus</i> , Gerst., p. 351. |
| 7 (2) Elytra shining. | |
| 8 (9) Humeral crests angularly prominent. | <i>humeralis</i> , Arrow, p. 353. |
| 9 (8) Humeral crests not angularly prominent. | |
| 10 (11) Pronotum transverse | <i>cruciger</i> , Gorb., p. 353. |
| 11 (10) Pronotum not transverse | <i>vicinus</i> , Arrow, p. 354. |
| 12 (1) Body rather short; abdomen of the male not flattened nor hollowed in the middle. | |
| 13 (16) Club of the antenna short, broad and compact. | |
| 14 (15) Elytra widest before the middle .. | <i>dohertyi</i> , Gorb., p. 355. |
| 15 (14) Elytra widest behind the middle .. | <i>eucerus</i> , Arrow, p. 355. |
| 16 (13) Club of the antenna long and loose. | <i>marseuli</i> , Gorb., p. 356. |

300. *Eucteanus hardwickei*.

Eumorphus hardwickii, Hope,* Gray's Zool. Misc. 1831, p. 22; Gerst., Mon. Endom. 1858, p. 126.

Eucteanus hardwickei, Arrow, Trans. Ent. Soc. Lond. 1920, p. 66.

Very deep violet, each elytron decorated with two large, transversely oval, bright yellow patches, extending from the outer margins almost to the suture and divided from each other by a distance equal to their own diameter. The anterior patch is strongly oblique and very nearly reaches the basal margin of the elytra at the shoulder.

Narrowly elongate, moderately convex and entirely opaque upon the dark-coloured parts of the upper surface, the pale patches being a little more shining. The head is rugose and the pronotum densely and unevenly punctured. The pronotum has a feeble median groove and a pair of anterior lateral depressions; it is transverse, the lateral margins are reflexed, strongly curved in front and nearly parallel behind, the front angles are produced and acute, the hind angles blunt and the base lightly trisinate and feebly margined. The elytra are densely punctured, but the punctures are less deep upon the light areas, and the sides and posterior part are entirely opaque; the shoulders bear rounded carinæ produced outwards a little and the apices are slightly produced and separately rounded. The legs and antennæ are very slender, all the joints of the latter elongate, the club loosely articulated and rather narrow, but the terminal joint is nearly twice as wide as the preceding one. The prosternal process is very broad, densely punctured and rounded behind. The metasternum and abdomen are densely punctured at the sides and strongly but less closely in the middle, the former with a smooth shining median line.

♂. The abdomen is hollowed along the middle, the sides of the hollowed part strongly carinate and the 5th and 6th segments strongly emarginate behind and produced on each side.

Length, 14 mm.; *breadth*, 7 mm.

NEPAL (*Maj.-Gen. Hardwicke*).

Type in the British Museum; co-type in the Oxford University Museum.

I have not seen a female.

301. *Eucteanus cœlestinus*.

Eucteanus cœlestinus, Gerst.,* Arch. f. Nat. xxiii, 1857, 1, p. 240; id., Mon. Endom. 1858, p. 359, pl. iii, figs. 7, 10, 13, 30, 47.

Deep purplish- or bluish-black, shining beneath but not above, each elytron decorated with two large, rounded, bright yellow patches, placed as in the preceding species, the two patches on each side separated by an interval equal to the diameter of one of them and the anterior one extending to the outer margin.

Elongate and convex. Pronotum opaque and rugosely punctured, rather flat, with the lateral margins bisinuate, the front angles strongly produced and very acute, the hind angles bluntly produced. The elytra are closely punctured upon the dark parts, less so upon the light areas, entirely opaque at the sides but rather less so near the suture; the shoulders bear lateral carinæ produced outwards a little, the lateral margins are slightly flattened and gently curved and the apices a little produced and rounded. The antennæ are very slender and the last three joints form a rather long, very broad and moderately closely-articulated club, the 9th joint elongate, the 10th a little broader than it is long and the last not quite as long as it is broad. The lower

surface is closely punctured and very finely setose, with the mesosternum and the middle of the metasternum smooth.

♂. The median part of the abdomen is flattened beneath, its lateral borders are carinate and the 5th segment is produced into a sharp spine on each side, exposing a supplementary (6th) segment.

♀. The 5th ventral segment is deeply notched behind.

Length, 11.5–14.5 mm.; *breadth*, 6–7.5 mm.

ASSAM: Khasi Hills. SIKKIM: Darjeeling (*Ribbe*).

Type in the British Museum.

302. *Eucteanus mussuricus*, sp. nov.

Deep purplish-blue above and beneath, each elytron ornamented with two pale yellow patches, the first placed a little behind the base, touching the outer margin and produced obliquely towards the suture, which it does not quite attain, its hind margin nearly horizontal, the second transversely oval in shape, placed between the middle and the apex, and not quite reaching the inner or outer margin.

Moderately elongate in shape, coriaceous and entirely opaque above, with the exception of the scutellum, which is smooth and shining, and the pale patches, which are less opaque than the remaining surface. The pronotum is distinctly transverse, very coarsely and rugosely punctured, flat but a little uneven, with its lateral margins a little raised, gently bisinuate, converging anteriorly, with the front angles very acutely produced, the hind angles a little produced obliquely but not sharp, and the base margined, with the lateral foreæ feeble but distinct. The elytra are finely and densely punctured, except upon the pale patches, where the punctures are less close; the shoulders bear carinate prominences, which are gently rounded and not abruptly projecting, and the apices are a little produced and flattened. The antennæ are slender, all the joints elongate, 3 to 7 differing little in length, 8 twice as long as it is wide, the club rather narrow, its terminal joint pear-shaped. The lower surface is closely punctured and finely pubescent, but moderately shining.

♂. The median part of the abdomen is flattened beneath, its lateral borders are carinate and the 4th and 5th sternites are strongly produced on each side behind.

Length, 9 mm.; *breadth*, 4.5 mm.

UNITED PROVINCES: Mussoorie (*S. N. Chatterjee*, July).

Type in the British Museum.

This species closely resembles *E. hardwicki*, but is smaller, the posterior angles of the prothorax are produced outwards and the shoulders of the elytra are less prominent.

303. *Eucteanus humeralis*.

Eucteanus humeralis, Arrow, Trans. Ent. Soc. Lond. 1920, p. 67.

Deep purplish- or bluish-black, with the elytra shining, except at the apices, and each decorated with two bright yellow oval patches separated by an interval equal to about two-thirds of their diameter. The patches nearly reach the outer margin, the anterior one is a little oblique and does not quite cover the shoulder, and the posterior one is slightly transverse and almost touches the suture.

Moderately elongate and convex. The pronotum is transverse, densely and rugosely punctured, with the lateral margins bisinuate, the front angles acutely and the hind angles rather bluntly produced and the base narrowly margined. The scutellum is semicircular and smooth. The elytra are closely and strongly punctured, with the punctures almost obsolete upon the pale areas, the shoulders bear lateral carinæ, which are a little produced outwards, and the apices are slightly produced and blunt. The pro- and meso-sterna are coarsely punctured, the metasternum smooth and shining in the middle, the sides of the metasternum and the abdomen closely punctured and finely setose. The antennæ are very slender, with a moderately broad, loosely-articulated club, all three joints of which are longer than broad.

♂. The abdomen is hollowed along the middle, the sides of the excavation are very sharply carinate and the 5th and 6th segments acutely produced on each side. The tibiæ are long and gently curved.

♀. The abdomen is convex beneath, the 5th ventral segment is a little emarginate and the 6th acutely bifid. The tibiæ are straight and shorter than in the male.

Length, 12 mm.; breadth, 6 mm.

BURMA: Haka, Chin Hills (*F. Venning*).

Type in the British Museum.

304. *Eucteanus cruciger*.

Eucteanus cruciger, Gorh.,* Proc. Zool. Soc. Lond. 1897, p. 460, pl. xxxii, fig. 10; Arrow, Trans. Ent. Soc. Lond. 1920, p. 68.

Shining dark steely-blue or purple, with the head and pronotum and the sides and apices of the elytra opaque, and each elytron ornamented with two very large, nearly round, pale yellow, patches, reaching to the outer, and almost to the inner, margins and separated from each other by an interval equal to about half the diameter of one of them. The anterior patch does not quite reach the base but nearly covers the shoulders, and is placed a little obliquely, not reaching quite so near the suture as the posterior patch.

Not very elongate, convex, smooth and shining, with a clothing of minute grey hairs beneath. The pronotum is strongly transverse, densely and rugosely punctured, with the sides a little

rounded, converging in front, the front angles acutely and the hind angles rather bluntly produced and the base margined. The scutellum is nearly semicircular, smooth and elevated in the middle. The elytra are irregularly punctured, more strongly upon the dark intervals than upon the pale areas, broad at the shoulders, which are carinate but rounded, widest behind the middle and moderately produced at the extremities. The lower surface is closely punctured and very finely setose, with the middle of the mesosternum and metasternum smooth and shining. The antennæ are very slender, all the joints except the penultimate one elongate, the club moderately broad, the terminal joint almost as broad as it is long.

The male has the abdomen excavated, sharply carinate on each side and the 5th and 6th segments acutely produced on each side.

Length, 14 mm.; *breadth*, 7 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum.

305. *Eucteanus vicinus*.

Eucteanus vicinus, Arrow, Trans. Ent. Soc. Lond. 1920, p. 67.

Deep violet, with two large, nearly round, pale yellow patches upon each elytron, extending almost to the inner and outer margins and separated from each other by an interval equal to about half the diameter of one of them. The anterior patch does not quite reach the basal margin.

Moderately elongate and convex, with the pronotum narrow, opaque and densely punctured, the lateral margins gently bisinuate and the front and hind angles acutely produced. The elytra are shining, except at the sides and apices, fairly strongly but unequally punctured, with the shoulders sharply carinate but not very prominent. The antennæ are rather long and slender, with the last three joints forming a loosely-connected moderately broad club, the penultimate joint not broader than it is long, the terminal joint a little longer than it is wide. The prosternum is broadly rounded behind, the mesosternum rectangular, the metasternum smooth and shining in the middle and the abdomen (♀) strongly and closely punctured, with a thin clothing of short greyish setæ.

♂. The abdomen is deeply hollowed beneath and shining, the sides of the cavity are sharply carinate and the 5th and 6th segments are produced into strong sharp spines on each side. The middle tibiæ are distinctly curved, the front and hind ones feebly.

♀. The tibiæ are straight.

Length, 10–11 mm.; *breadth*, 5 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum.

306. *Eucteanus dohertyi*.

Eucteanus dohertyi, Gorh.,* Proc. Zool. Soc. Lond. 1897, p. 460, pl. xxxii, fig. 10; Arrow, Trans. Ent. Soc. Lond. 1920, p. 68.

Deep bluish- or purplish-black, shining above and beneath, and decorated with two nearly round, pale yellow, patches upon each elytron, nearly reaching the outer but not the inner margin, and separated from each other and from the patches of the other side by intervals equal to about two-thirds of their own diameter.

Short and convex. The head and pronotum are strongly and closely punctured but rather shining; the latter transversely impressed in front and on each side behind the middle, with the sides obtusely angulate before the middle, strongly convergent in front and all the angles acutely produced, the base not margined but having minute sharply-impressed lateral foveæ on each side. The elytra are closely punctured, but the punctures are feebler upon the pale areas, the sides are strongly rounded, the shoulders are carinate but rounded and not produced outwards, and the apices are slightly produced. The greatest breadth of the body is behind the shoulders. The antennæ are slender, with a broad, triangular and very closely-jointed club. The pro- and mesosterna are moderately punctured, the latter transverse, the metasternum and abdomen closely punctured and thinly clothed with fine greyish pubescence.

The sexes are almost identical, but the middle tibia of the male is a very little more decidedly curved than that of the female.

Length, 8-9 mm.; breadth, 5-6 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

307. *Eucteanus eucerus*. (Pl. I, fig. 3.)

Eucteanus eucerus, Arrow, Trans. Ent. Soc. Lond. 1920, p. 68.

Moderately shining, deep steely-blue, a little brighter upon the elytra, which are each ornamented with two very large, rounded, bright yellow patches, placed as in the other species, extending to the lateral margins and almost covering the shoulders, the intervals between the patches on each side less than half their diameter, the posterior pair close together, the anterior pair a little less so.

Short in form, with the pronotum relatively small, broadly transverse, strongly punctured, except for a narrow, smooth, shining median line, with a deep transverse furrow in front and an oblique sulcus behind it on each side, the lateral margins gently bisinuate, and all the angles acute but scarcely produced. The elytra are closely and evenly punctured, but a little less strongly upon the pale areas than upon the dark intervals, broad at the shoulders, which are not produced, with the lateral margins a little flattened, the greatest width of the elytra a little behind

the middle, and the apices a little produced and separately rounded. The lower surface is rather closely punctured and thinly clothed with grey setæ. A smooth unpunctured sixth abdominal segment is distinctly visible, but is more or less retractile. The antennæ have a slender footstalk and a very short and broadly triangular club, the 9th joint being very slightly dilated, the 10th and 11th very closely fitted together and strongly transverse and the latter much larger than the former.

The sexes are practically identical.

Length, 8-9 mm.; *breadth*, 5-5.5 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum.

308. *Eucteanus marseuli*.

Eucteanus marseuli, Gorb.,* *Endom. Recit.*, 1873, p. 56.

Black, with a very deep bluish tinge, not shining above, each elytron decorated with two large, transversely-placed, pale yellow oval patches, reaching almost to the lateral margins externally, separated from the corresponding patches of the other side by a distance less than their own length, and longitudinally divided by an interval rather wider than their own breadth.

The body is short and broad. The pronotum is relatively very small, rather flat, strongly and closely punctured, about half as wide again as it is long, the sides gently curved, convergent in front, and all the angles sharply pointed, the base minutely impressed on each side and not margined. The scutellum is rather smooth and shining, with a few punctures, and rounded behind. The elytra are very convex, more finely and a little less closely punctured than the pronotum, the yellow patches more lightly punctured than the remaining surface; the shoulders are sharply carinate, but not very prominent. The legs and antennæ are slender, the club of the latter relatively long and loose but broad at the end, the terminal joint nearly circular. The lower surface is shining but punctured all over, with a very thin clothing of minute hairs.

The two sexes are practically identical, but the (presumed) male has the exerted 6th ventral segment narrower than in the other sex.

Length, 8-10 mm.; *breadth*, 4.5-6 mm.

UNITED PROVINCES: West Almora (*H. G. Champion*); Dehra Dun (*G. Rogers*); Chakrata, Kanasar, 7000 ft. (*C. F. C. Beeson*, June); Chaubattia, 6000-7000 ft. (*S. R. Archer*); Baghi, Simla Hills, 8500 ft. (*S. N. Chatterjee*, Sept.).

Type in the British Museum.

The anterior pale patch seems to be less constant than the posterior one, and I have seen specimens in which it is reduced to a small oval spot less than half the size of the other.

Genus **ENDOMYCHUS.**

Endomychus, Panzer, Ent. Tasch. 1795, p. 175; Fabr., Syst. Eleuth. i, 1801, p. 505; Gerst., Mon. Endom. 1858, p. 368; Chap., Gen. Col. xii, 1876, p. 135; Arrow, Trans. Ent. Soc. Lond. 1920, p. 66.

Eudomychus, Latr., Précis Car. Gén. Ins. 1796, p. 71.

Cyananges, Gorb., Ent. Month. Mag. xi, 1874, p. 54; id., Proc. Zool. Soc. Lond. 1897, p. 650.

Cænomychus, Lewis, Entom. xxvi, 1893, p. 153.

TYPE, *Chrysomela coccinea*, L. (Britain, etc.).

Range. Europe, N. America, Japan, Indo-China, Burma.

Of rather ovate shape, with the pronotum nearly equal in width at the base to the base of the elytra. Antennæ with the 3rd joint little longer than the 2nd or 4th, the last three forming a loosely-articulated narrow club, scarcely flattened. Eyes prominent, moderately finely faceted. Labrum prominent. Mandible very short, with the tip minutely trifid, the apical tooth sharp but not produced. Inner lobe of the maxilla narrow, outer lobe longer and broader, dilated and squarely truncate at the end; last joint of the palpus pear-shaped. Ligula slightly elongate, not produced laterally; palpi elongate, pointed at the end. Pronotum without stridulatory membrane, narrowly margined at the sides and base, with strongly-impressed basal foveæ. Scutellum not transverse. Elytra without distinct flattened margins. Prosternum broad between the front coxæ, and distinctly and broadly produced behind them. Mesosternum rather quadrate between the middle coxæ, with the front and hind margins straight. Basal segment of the abdomen beneath longer than the three following together. Legs simple, not very long, with the tarsi moderately broadly lobed.

The two sexes are practically identical externally.

Key to the Species of ENDOMYCHUS.

Broadly ovate, with slender antennæ *bicolor*, Gorb., p. 357.

Narrowly ovate, with stout antennæ *divisus*, Arrow, p. 358.

309. Endomychus bicolor.

Endomychus bicolor, Gorb.,* Trans. Ent. Soc. Lond. 1875, p. 22.

Black and shining, with the elytra and abdomen bright orange.

Rather broadly oval in shape, strongly convex, very smooth and shining, with very long and slender antennæ. All the joints of the latter are elongate, the 3rd and 4th most slender and of equal length, but only a little longer than the 2nd, the last three twice as long as broad, the terminal one pear-shaped. Head finely punctured. Pronotum not quite twice as broad as its length in the middle, very minutely and scantily punctured, with the sides narrowly margined, gently rounded in front, straight and divergent behind, the front angles rather blunt, the hind ones slightly

acute, the base strongly margined and the lateral foveæ deep, extending about one-third of the length of the pronotum. Scutellum triangular. Elytra very finely and sparingly punctured, with the sides evenly rounded and the shoulders scarcely prominent. Prosternal process rounded. Mesosternum strongly transverse. Metasternum and abdomen very smooth, minutely

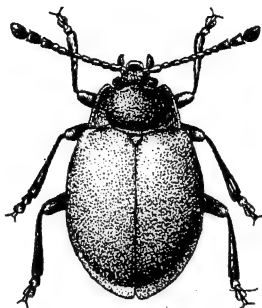


Fig. 65.—*Endomychus bicolor*.

punctured, thinly clothed with minute golden hairs, which are most apparent upon the anterior part of the metasternum and the posterior part of the abdomen.

Length, 6 mm.; *breadth*, 4 mm.

SIKKIM : Rungbong Valley, Gopaldhara, 3440 ft. (*H. Stevens*, Aug.).

Type in the British Museum.

The type is very imperfect, and neither it nor a specimen in Mr. O. E. Janson's collection has any precise locality attached. A single example taken by Mr. Stevens is the only other I have seen.

310. *Endomychus divisus*.

Endomychus divisus, Arrow, Ann. Mag. Nat. Hist. (9) v, 1920, p. 334.

Endomychus bicolor, Gorh., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 302.

Endomychus tonkineus, Pic, Mém. Exot.-Entom. xxxvi, 1922, p. 9.

Black and shining, with the elytra, metasternum and abdomen bright orange.

Oval in shape, rather narrow, not very convex, very smooth and shining, with the antennæ rather stout and the legs not long. The first three joints of the antenna are feebly elongate, the 3rd a little longer than the 1st and 2nd, the last three slightly flattened, the 9th a little elongate, the 10th as broad as long, the last elongate-oval. Head finely punctured. Pronotum twice as wide as it is long in the middle, very minutely and sparsely punctured, convex in the middle, with the sides and base strongly

margined, the lateral margins bisinuate, the front angles bluntly produced, a little excavated, the hind margins acutely produced and the basal foveæ very deeply impressed, extending to the middle of the pronotum. Elytra finely but distinctly punctured, with the sides very gently rounded, and the shoulders very slightly prominent. Prosternal process strong and rounded behind. Metasternum finely and unevenly punctured. Abdomen very thinly clothed beneath with minute setæ.

Length, 4.5–5 mm.; *breadth*, 3 mm.

BURMA: Karen Hills, 4000–4200 ft. (*L. Fea*, May). INDO-CHINA (*R. Vitalis de Salvaza*).

Type in the British Museum.

This species was incorrectly referred to by Gorham as *E. bicolor* in Ann. Mus. Genova, xxxvi, 1896, p. 302.

There is no means of judging whether the insect, of which the description is translated in the following words, really belongs to this genus or not.

Cœnomychus humeralis, Pic, *Mélanges Exot.-Entomologiques*, pt. 36, 1922, p. 10.

“Oblong, pitchy, with the antennæ at the base and the legs in part red, the elytra metallic black, marked with reddish-yellow at the shoulders and behind the scutellum. Length 5.5 mm. Kashmir. A very distinct species by its coloration.”

Upon the same page of M. Pic's *Mélanges Exot.-Entomologiques* another species, “described” in seven words, receives the name of *Endomychus atrimembris*. Its habitat is “Indes,” a word of suitably indefinite import.

Genus CYCLOTOMA.

Cyclotoma, Muls., *Mém. Acad. Lyon*, (2) i, 1851, p. 71; Gerst., *Mon. Endom.* 1858, p. 365.

Panomara, Gerst., *Archiv f. Nat.* xxiii, 1857, 1, p. 241; id., *Mon.*

Endom. 1858, p. 363; Chap., *Gen. Col.* xii, 1876, p. 134.

Niteta, Weise, *Deutsche Ent. Zeitschr.* xxxiv, 1890, p. 21.

TYPE, *Cyclotoma testudinaria*, Muls. (Java).

Range. The Indo-Malayan Region.

Hemispherical in shape and very smooth and glossy above. Head small, deeply sunk in the prothorax. Pronotum also small and extremely short, about three times as wide as it is long, with the sides gently curved and strongly converging forwards, the lateral margins a little reflexed, the front angles blunt, the hind angles rounded off and the base rounded, not margined and without lateral foveæ. Elytra much broader at the shoulders than the pronotum, strongly and evenly rounded at the sides, with very wide epipleuræ beneath, and conjointly rounded behind. Front coxæ rather wide apart, the prosternum broadly produced forwards and covering the head as far as the mouth, a little dilated behind the coxæ, where it forms a broad rounded process. Mesosternum very short. Legs short, the tibiæ much shorter than the femora,

the tarsi rather broad. Antennæ short, of 11 (or, in *C. cingalensis*, only 10) joints, but with a narrow 3-jointed club almost as long as the footstalk, joints 1, 3 and 4 more or less elongate, the three or four following very close and minute, and the last three much larger, elongate and loosely-articulated, forming a linear club not flattened nor dilating towards the end. Mandible rounded, short and stout, with the tip minutely and equally bifid. Lobes of the maxilla of equal length, the inner one narrow, with a pointed tooth at the end, the outer broad, dilated and squarely truncate at the end; palpus elongate, with the 2nd joint longest, the 3rd as broad as long, and the terminal one cylindrical and bluntly pointed. Ligula slightly longer than wide, rounded in front and not at all produced laterally; labial palpi elongate and pointed at the tip.

Key to the Species of CYCLOTOMA.

- 1 (4) Yellow, with black spots on head,
thorax and elytra.
- 2 (3) Elytra decorated with fourteen spots;
antennæ 11-jointed *indiana*, Gorb., p. 360.
- 3 (2) Elytra decorated with ten spots;
antennæ 10-jointed *cingalensis*, Gorb., p. 361.
- 4 (1) Red, with black spots upon elytra
only *monticola*, Arrow, p. 361.

311. *Cyclotoma indiana*. *

Panomæa indiana, Gorb.,* Proc. Zool. Soc. Lond. 1897, p. 462,
pl. xxxii, fig. 5.

Yellow, with a transverse row of four spots upon the pronotum, the scutellum, and seven spots upon each elytron, three near the inner and four near the outer margin, as well as the club of the antenna, black. The 1st and 2nd inner and the 3rd outer spots are rather larger than the rest and more or less transverse.

Hemispherical in shape, but a little attenuated in front and behind, very convex, smooth and shining. The head is rather closely punctured and thinly clothed with minute grey setæ. The pronotum is very small, nearly three times as wide as its length in the middle, finely punctured, with the lateral margins strongly curved and all the angles entirely rounded off. The elytra are distinctly and evenly punctured, not very broad at the shoulders, with moderately wide flattened lateral margins and very slightly attenuated behind. Joints 1 to 4 of the antenna are elongate, 3 slender, 5 to 8 very short and compact and the last three large and nearly equal. The prosternum is convex and rather coarsely punctured, the metasternum very strongly punctured, except in its anterior part, and the abdomen rather more finely and closely.

Length, 6.5–8 mm.; *breadth*, 6–7 mm.

SIKKIM: Mungphu (*E. T. Atkinson*). ASSAM: Manipur (*W. Doherty*). INDO-CHINA.

Type in the British Museum.

312. *Cyclotoma cingalensis*.

Panomæa cingalensis, Gorh.,* Proc. Zool. Soc. Lond. 1886, p. 162, pl. xvii, fig. 2.

Yellow, with the middle of the head, a double spot at the middle of the base of the pronotum, the scutellum, the suture of the elytra and five spots upon each, two internal and three external, as well as the club of the antenna, black.

Hemispherical in shape, but a little produced posteriorly, highly convex, very smooth and shining, with the entire upper surface finely and not closely punctured. The head is scarcely pubescent. The pronotum is about two and a half times as broad as it is long in the middle, with the lateral margins well rounded and all the angles very obtuse, the hind angles flattened. The elytra are very broad at the base, with wide flattened external margins, and slightly produced conjointly behind. The lower surface and legs are thinly clothed with pale setæ. The prosternal process is convex, broadly rounded and almost unpunctured, the mesosternum smooth and very short, the metasternum transversely striolated upon its anterior half and rather strongly and closely punctured upon the posterior half. The antennæ are short and composed of only ten joints, of which the 3rd is rather slender, the four following very short and closely-articulated and the last three large, the 8th and 9th pear-shaped and the last oval and little shorter than the preceding two together.

Length, 5-5.5 mm.; *breadth*, 4.5-5 mm.

CEYLON: Dikoya, 3800-4200 ft. (*G. Lewis*, Dec., Jan., Feb.).

Type in the British Museum.

313. *Cyclotoma monticola*.

Cyclotoma monticola, Arrow, Trans. Ent. Soc. Lond. 1922, p. 490.

Bright red, with the club of the antenna and seven nearly equal and equidistant black spots upon each elytron black, three of the latter near the suture and four near the lateral margin.

Hemispherical in shape and extremely smooth and glossy. The clypeus is rather closely punctured, the forehead scantily, with a very thin, scarcely perceptible clothing of minute setæ. The pronotum is very broad, the breadth equal to three times its length, finely punctured, with the lateral margins feebly rounded and all the angles obtuse. The elytra are finely and evenly punctured, with rather broad flattened lateral margins, broadly conjointly rounded behind and not at all produced. The metasternum is strongly punctured and the abdomen rather finely. The basal joint of the antenna is long, the 2nd globular, the 3rd and 4th slender, the 5th to 8th very short, the 9th to 11th together as long as the seven preceding, and the last not much longer, but a little broader, than the 9th and 10th.

Length, 6.5-7.5 mm.; *breadth*, 6-7 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*); Coorg, Sanivarsandai,

4000 ft. (April, *T. V. Ramakrishna*); Anaimalai Hills (*H. L. Andrewes*); Kanara (*T. R. D. Bell*).

Type in the British Museum.

This species has a much richer colour than its Indian congeners, and is also differently spotted and of more exactly hemispherical shape. It more closely resembles the Philippine *C. coccinellina*,



Fig. 66.—*Cyclotoma monticola*.

Gerst., from which it differs in its deeper colouring, broader prothorax (that of *C. coccinellina* is only two and a half times its length), less closely punctured and pubescent head and the longer 1st and 3rd joints to the antenna.

Found by Mr. Ramakrishna upon Coffee.

Division STENOTARSINI.

Small in size, generally compactly built and, with the exception of *Atrichonota flavipennis*, clothed with hair above and beneath; the pronotum without stridulatory membrane anteriorly, but, except in the genus *Saula*, having broad, flat, raised lateral borders. Antennæ very variable, sometimes very long and slender, sometimes stout, the club loosely-articulated, not or little flattened. Mandible short, with the tip acute, not bifid. Lobes of the maxilla fringed with long close hair, the inner lobe slender, the outer longer and very broad at the extremity. Ligula short, produced into a membranous lobe on each side.

This group consists of very numerous species, generally of small size and varying little in colour, the great majority being yellow, tawny or brown, rarely relieved with any decoration or contrast. Most are of broad compact form, many almost hemispherical, and, with the single exception of the possibly mimetic *Atrichonota flavipennis*, here described from the only known specimen, all are clothed with hair above and beneath, that

of the upper surface being sometimes soft and silky and sometimes stiff and erect.

In most of the species the two sexes are not easily distinguishable, but the males of some exhibit remarkable peculiarities in the legs and antennæ.

Key to the Genera of STENOTARSINI.

- | | |
|---|-----------------------------------|
| 1 (12) Pronotum with broad raised borders. | |
| 2 (5) Tarsi slender. | |
| 3 (4) Elytra with dilated margins | ENDOCELUS, Gorh., p. 363. |
| 4 (3) Elytra without dilated margins . . | CHONDRIA, Gorh., p. 365. |
| 5 (2) Tarsi with the 2nd joint broad. | |
| 6 (7) Club of the antenna very asymmetrical | ECTOMYCHUS, Gorh., p. 367. |
| 7 (6) Club of the antenna almost or quite symmetrical. | |
| 8 (11) Mesosternum broad, excavated in front. | |
| 9 (10) Body hairy; prosternal process narrower behind than the mesosternum | [p. 370.
STENOTARSUS, Perty, |
| 10 (9) Body smooth; prosternal process not narrower behind than the mesosternum | [p. 386.
ATRICHONOTA, gen. n., |
| 11 (8) Mesosternum narrow, not excavated in front | DANAË, Reiche, p. 388. |
| 12 (1) Pronotum without broad raised borders | SAULA, Gerst., p. 393. |

Genus ENDOCELUS.

Endocælus, Gorham, Proc. Zool. Soc. Lond. 1886, p. 162.

TYPE, *Endocælus orbicularis*, Gorh.

Range. Ceylon, Burma.

Hemispherical in shape and entirely clothed with erect setæ, with short legs and antennæ. Antennæ 10-jointed, the two basal joints massive, oval, 3 to 7 minute and very closely articulated, 3 slightly elongate, 4 to 7 very short, 8 to 10 very large and loosely connected, together nearly as long as the rest of the antennæ, 8 and 9 about as long as broad, asymmetrical, 10 oval. Eyes small, far apart, very prominent, coarsely faceted.

Pronotum very short and broad, with strongly-rounded sides, moderately wide elevated margins, the front angles blunt, the hind angles obsolete or almost, the base very finely and narrowly margined, broadly lobed in the middle, the lateral foveæ deep and punctiform and placed far from the outer margins. Scutellum minute, broad, rounded behind. Elytra very convex, with very wide epipleuræ and widely explanate margins, closely fitting the pronotum at the base and without prominent shoulders. Prosternum elevated between the front coxæ, not wide, produced to a point in front and forming a short and rounded lobe behind.

Mesosternum wide, impressed in front, where it meets the prosternal process, and meeting the metasternum in a straight suture. Abdomen with five visible ventral segments, the first and last long, the three intervening short. Femora short and stout, not reaching the outer margins of the body. Tibiæ very slender. Tarsi long and slender, 3-jointed, the two basal joints narrowly lobed. Claws with a quadrate tooth at the base.

The first describer of this peculiar genus has given a very inaccurate account of it and misplaced it entirely. Its hemispherical shape is all that it has in common with *Cyclotoma*, to which he supposed it to be closely related. It is in reality a highly-modified offshoot of the STENOTARSINI, no doubt adapted to a peculiar mode of life. The apparent rarity of the species may be due to their being mistaken for COCCINELLIDÆ, from which only a close examination can distinguish them.

Key to the Species of ENDOCÆLUS.

Explanate margin of the elytron nearly half

as wide as the discoidal part *orbicularis*, Gorh., p. 364.

Explanate margin of the elytron narrower .. *contractus*, Gorh., p. 365.

314. *Endocælus orbicularis*.

Endocælus orbicularis, Gorh.,* Proc. Zool. Soc. Lond. 1886, p. 162.

Chestnut-red, with the club of the antennæ darker, and clothed with not very close, erect pale yellow setæ.

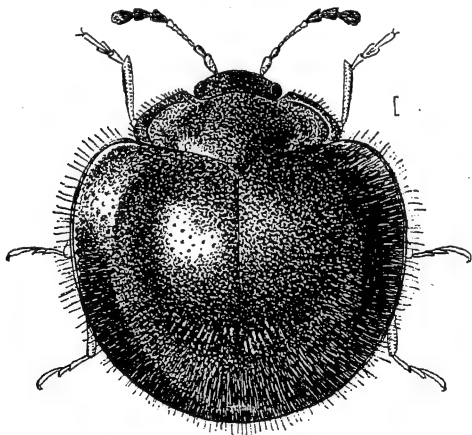


Fig. 67.—*Endocælus orbicularis*.

Hemispherical, a little dilated at the shoulders and scarcely tapered behind. Pronotum very smooth and shining, extremely minutely and sparsely punctured, three times as wide as long, with the front angles bluntly produced, the sides strongly rounded, the

lateral margins raised, moderately wide, not tapering behind, the hind angles almost obsolete, the base broadly lobed, with a fine wavy marginal stria, the lateral foveæ as near the middle as the sides. Scutellum triangular. Elytra strongly and evenly punctured, very convex, with very wide explanate margins, dilated a little at the shoulders, which are strongly rounded, and narrowing behind, the average width of the margin being nearly a third that of the elytron; the epipleuræ very smooth and shining beneath, with an inner marginal series of very large pits. Mesosternum, metasternum, and 1st ventral segment coarsely and sparsely punctured, the metasternum smooth and shining in the middle. Femora not thickened, tibiæ slender. Footstalk of the antenna rather short, but a little longer than the club.

Length, 2.5 mm.; *breadth*, 2.5 mm.

CEYLON: Bogawantalawa, 4900–5200 ft. (*G. Lewis*, March).

Type in the British Museum.

315. *Endocælus contractus*.

Stenotarsus contractus, Gorb., * Ann. Mus. Civ. Genova, xxxvi, 1896, p. 298.

Pale tawny yellow, with the club of the antenna black, and rather thickly clothed above with erect pale yellow setæ.

Hemispherical. Eyes extremely small. Pronotum three times as wide as long, very finely punctured, with the front angles completely rounded, the sides and base from there to the basal foveæ forming a continuous semicircle, the lateral margin raised, moderately broad in front and from there tapering to a point, the base between the lateral foveæ forming a rounded, very narrowly margined lobe, the foveæ deep and round, nearer to the middle than to the outer margins. Elytra strongly and closely punctured, convex, a little wider at the base than the prothorax, the sides less widely margined; a slight linear depression parallel to the outer edge cutting off an obliquely explanate border about one-fifth the width of the elytron; the epipleuræ smooth and shining. Prosternum not narrowed between the coxæ. Mesosternum strongly punctured. Metasternum strongly but sparsely punctured, shining. Femora thickened, broad and flat. Footstalk of the antenna very short and closely articulated.

Length, 2.5 mm.; *breadth*, 2.5 mm.

TENASSERIM: Meetan (*L. Fea*, April).

Type in the Genoa Museum.

Genus **CHONDRIA**.

Chondria, Gorb., Proc. Zool. Soc. Lond. 1887, p. 651; Arrow, Trans. Ent. Soc. Lond. 1920, p. 58.

TYPE, *Chondria lutea*, Gorb. (Japan).

Range. India, Malayan Region, Japan.

Small, compact, oval or globose in form, with rather slender

antennæ and legs, and generally clothed with erect hair. Last three joints of the antennæ large but not broad, forming a long, very loosely-articulated club. Pronotum with broad elevated borders. Elytra without dilated margins. Tarsi long, the basal joint cylindrical, the 2nd a little produced beneath but not flattened nor dilated, the 3rd short but not inconspicuous, the 4th very long.

The structure is that of *Stenotarsus*, but the legs are slender and the tarsi long, without broad soles.

Ten species of this genus have been described, each of which is known from a single specimen only.

Key to the Species of CHONDRIA.

Surface of the body uniformly yellow; hind angles of the prothorax sharp.....	<i>indica</i> , Arrow.
Elytra red and black; hind angles of the prothorax rounded	<i>araneola</i> , sp. n.

316. *Chondria indica*.

Chondria indica, Arrow, Trans. Ent. Soc. Lond. 1920, p. 59.

Bright yellow, with the antennæ black, except at the base, and rather closely clothed with erect yellow hair.

Very broadly oval and highly convex, with long slender antennæ, of which joints 1 to 8 are slightly elongate, 9 and 10 as broad as they are long and 11 shortly oval. The sides of the pronotum are gently rounded, diverging behind, its hind angles are sharp, the elevated margins are broad in front but narrow a little to the base, the base is not margined and the lateral foveæ form deep crescentic incisions. The elytra are punctured in regular rows and the intervals are clothed with close erect setæ, which form longitudinal bands separated by narrow lines.

Length, 3 mm.; *breadth*, 2 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

317. *Chondria araneola*, sp. nov.

Reddish-testaceous, with the elytra black, except a narrow encircling margin to each, and the club of the antenna of the same colour.

Almost hemispherical, very convex, moderately shining, entirely clothed with fairly close erect golden hair. The pronotum is very broad, finely and sparsely punctured, with the lateral raised borders broad and a little hollowed, the front angles bluntly produced, the hind angles rounded off and the basal foveæ forming deep crescent-shaped incisions. The elytra bear regular rows of moderately large punctures, which are faint and inconspicuous on the dorsal part, but become stronger towards the sides, the lateral rows being very deeply impressed and situated in deep grooves;

the humeral angles are rather sharp, the lateral margins very narrowly reflexed and the apices a little produced. The meso-sternum is very short and broad, the metasternum rather strongly punctured and the basal sternite is very large and very coarsely pitted. The antennæ and legs are slender, all but the penultimate joint of the former a little elongate, joints 3 to 8 nearly equal and

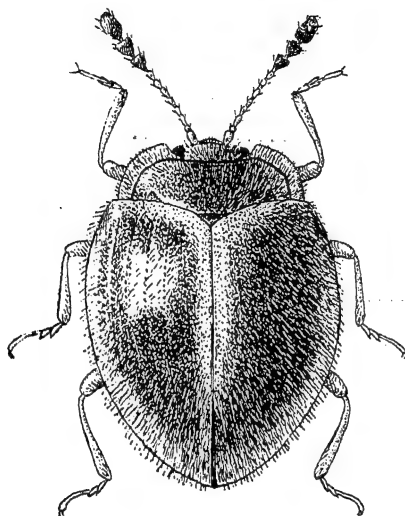


Fig. 68.—*Chondria araneola*.

together about as long as 9 to 11, which are moderately large, the terminal one twice as long as the preceding and truncate at the end.

Length, 2.5 mm.; *breadth*, 2 mm.

SIKKIM: Gopaldhara, Rungbong Valley (*H. Stevens*).

A single male specimen was taken by Mr. Stevens and presented to the British Museum.

Genus ECTOMYCHUS.

Ectomychus, Gorb., Proc. Zool. Soc. Lond. 1887, p. 646.

TYEN, *Ectomychus basalis*, Gorb. (Japan).

Range. India, Japan.

Of oblong or oval shape, the whole body clothed with soft pale pubescence; the legs and antennæ not very long; the 1st joint of the antenna oval, 2nd slightly elongate, 3rd to 8th regularly diminishing in length, forming a very slender but not long foot-stalk, 9th to 11th forming a large and very abrupt, loosely-articulated club, 9th and 10th short and broadly produced on the inner side, 11th nearly circular. Head rather broad, with the eyes small and rather far apart, prominent, round and finely

facetted. Pronotum strongly transverse and as wide as the elytra, with wide strongly-elevated lateral margins, the base not margined, the lateral foveæ sharply incised, straight and linear. Scutellum transverse and obtusely angular behind. Elytra not margined, conjointly rounded behind. Prosternal process short, truncate at the extremity. Mesosternum strongly transverse, excavated in front to receive the prosternum. Metasternum gently emarginate in front. Tarsi moderately long, not broad, the 2nd joint strongly lobed.

Key to the Species of ECTOMYCHUS.

- 1 (2) Body oblong in shape *monticola*, Arrow, p. 368.
- 2 (1) Body oval in shape.
- 3 (4) Legs pale *flavipes*, sp. n., p. 368.
- 4 (3) Legs black.
- 5 (6) Raised borders of the pronotum
moderately wide *nigripes*, sp. n., p. 369.
- 6 (5) Raised borders of the pronotum very
wide *ovatus*, sp. n., p. 369.

318. *Ectomychus monticola*.

Ectomychus monticola, Arrow, Trans. Ent. Soc. Lond. 1920, p. 62.

Reddish-testaceous, clothed with soft golden hair, the antennal club black, the two preceding joints more or less dark.

Rather narrowly oblong in shape and not very convex. The pronotum is very coarsely and deeply punctured, with the median line almost free from punctures; the sides are rather broadly and very sharply elevated, the inner edges of the border sharply carinate, so that a deep channel is formed within; the outer margins are rounded in front, nearly straight and parallel behind, the front angles produced but not acute, the hind angles nearly right angles, the base gently trisinate, the lateral foveæ linear, straight, very slightly divergent and not quite reaching the middle of the pronotum. The elytra are closely, finely and evenly punctured. The 1st ventral segment is as long as the remaining four together and is very strongly punctured at the sides. There is a rather deep depression on each side of the metasternum behind the middle coxæ, and also a circular depression on each side of the 1st ventral segment behind the hind coxæ.

Length, 2-3 mm.; *breadth*, 1 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

319. *Ectomychus flavipes*, sp. nov.

Reddish-testaceous, with the last six or seven joints of the antenna black.

Elongate-oval and moderately convex, with a clothing of yellow setæ. The head and pronotum are lightly and finely punctured. The raised borders of the pronotum are of moderate

width, slightly hollowed above, the lateral margins gently rounded in front, straight and divergent behind, the front angles very blunt, the hind angles almost acute, the base gently trisinate and the basal foveæ straight and nearly reaching the middle of the pronotum. The elytra are evenly and distinctly punctured. The legs are moderately long and slender. Joints 1 and 2 of the antenna are rather long, 3 not quite as long as 2 but longer than 4, 5-8 progressively diminishing, 9-11 together as long as the remainder with the exception of the 1st, the 11th shortly oval.

Length, 3 mm.; *breadth*, 2 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum.

320. *Ectomychus nigripes*, sp. nov.

Reddish-testaceous, with the femora, tibiæ and antennal club black and the tarsi and the four or five basal joints of the antenna reddish-brown.

Oval in shape and rather convex, with a clothing of fine yellow hair. The head is finely and sparsely punctured, the pronotum a little more closely. The lateral borders of the pronotum are moderately broad, a little hollowed above, and taper to the base; the outer margins are gently rounded in front, nearly straight and slightly divergent behind, the front angles bluntly produced, the hind angles right angles, the base feebly trisinate and the basal foveæ straight and parallel, reaching the middle of the pronotum. The elytra are evenly and moderately strongly punctured. The legs are moderately long, the tibiæ dilating gently from base to apex. Joints 1 to 6 of the antenna are elongate, 3 and 4 nearly equally long, 9 about as long as wide, 10 strongly transverse and 11 oval. The prosternal process is very short and broadly truncate behind. The mesosternum is about half as broad again as it is long, and the metasternum is very feebly punctured and rather tumid in the middle. The abdomen is strongly punctured beneath.

Length, 3 mm.; *breadth*, 2 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum.

321. *Ectomychus ovatus*, sp. nov.

Rust-red or testaceous-yellow, with the antennæ and legs dark, the femora, tibiæ and antennal club black, and the tarsi and the first three or four joints of the antenna dark brown.

It is rather regularly oval in shape, convex above and clothed with fine yellowish hair. The head and pronotum are finely, evenly and moderately closely punctured. The lateral borders of the pronotum are strongly raised, a little hollowed above, very broad in front and gradually narrowed to the base, the outer margins rounded in front, straight and slightly diverging behind,

the front angles bluntly produced, the hind angles right angles, the base feebly trisinate and the basal foveæ straight and parallel, extending to the middle of the pronotum. The elytra are evenly and rather strongly punctured. The legs are moderately long, the tibiæ a little dilated from base to apex. Joints 1 to 6 of the antenna are elongate, the 3rd markedly longer than the rest, the 9th joint about as long as it is wide, the 10th strongly transverse and the 11th oval.

Length, 3 mm.; *breadth*, 2 mm.

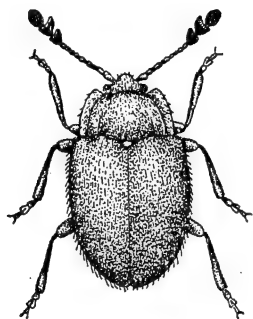


Fig. 69.—*Ectomychus ovatus*.

BURMA: Ruby Mines (*W. Doherty*). SIKKIM: Darjeeling, Gopaldhara, 4720 ft. (*H. Stevens*, Nov.).

Type in the British Museum.

This species differs only in small details from *E. nigripes*, which it closely resembles. It is a little more broadly oval, the raised margin of the pronotum is broader, the 3rd joint of the antenna is markedly longer than the 2nd and 4th, and the club a little narrower than that of *E. nigripes*.

Genus **STENOTARSUS**.

Stenotarsus, Perty, Delect. Anim. Artic. 1832, p. 112; Cast., Hist. Nat. Ins., Col. ii, 1841, p. 523; Erichs., Schomb. Reis. Brit. Guyana. iii, 1848, p. 579; Gerst., Mon. Endom. 1858, p. 298; Chap., Gen. Col. xii, 1876, p. 127.

Quirinus, Thoms., Arch. Ent. i, 1857, p. 157.

Stenotarsoides, Csiki, Termesz. Füzetek, xxiii, 1900, p. 401, note; Arrow, Trans. Ent. Soc. Lond. 1920, p. 48.

TYPE, *Stenotarsus brevicollis*, Perty (Brazil).

Range. Throughout the warmer regions of the globe.

Body compactly formed, hemispherical, oval or oblong, entirely clothed with hair, more or less erect upon the upper surface. Head rather deeply sunk in the thorax, with the eyes prominent, rather small and far apart and not very coarsely faceted. Clypeus very short, very sharply defined at the hind margin.

Labrum large, broad and rather convex above. Mandible short and stout, rather broad externally, with the tip shortly produced, the edge transverse and feebly bifid. Lobes of the maxilla fitting closely together, the outer one broad, rounded at the end and overhanging the inner; the palpus moderately long, with a long pointed terminal joint. Mentum transversely rectangular, slightly narrowing anteriorly; ligula of similar shape, but a little broader in front than at the base, with short lateral lobes consisting of transparent membrane, the front margin not distinctly emarginate; labial palpi rather widely separated, elongate, with the terminal joint narrowing to the end. Pronotum without stridulatory membrane in front, but with the lateral borders broadly elevated and flat, the lateral foveæ distinct and the base margined. Scutellum broadly triangular. Elytra closely co-adapted to the base of the pronotum and not or scarcely projecting at the shoulders, narrowly margined externally and conjointly rounded behind. Front and middle coxæ not widely separated; the prosternum produced behind as a narrow, bluntly pointed or truncate process; the horizontal face of the mesosternum about as long as it is wide, or transverse, and its retuse anterior face excavated to receive the end of the prosternal process; the metasternum margined in front. First ventral segment very long, about as long as the succeeding four, the 6th generally extruded. Legs not long, the tarsi varying in the length and breadth of the 1st and 2nd joints, but the latter always produced into a long free lobe. Antennæ rather stout, joints 1-8 compact, short and bead-like, not greatly differing in length, 9-11 larger and loosely articulated, forming a club not very sharply differentiated from the footstalk, symmetrical, and not distinctly flattened.

The sexes differ little. According to Gerstaecker the male has the 6th ventral segment extruded but the constancy of this character seems doubtful. The antennæ are longer in the male in some species, and the hind tibiæ occasionally show slight modifications. In *S. vallatus*, Gerst., the female has the thoracic margins much more strongly elevated than the male.

Key to the Species of STENOTARSUS.

- | | |
|---|------------------------------------|
| 1 (24) Elytra with regular rows of single punctures. | |
| 2 (19) Elytra moderately convex, distinctly longer than their combined width. | |
| 3 (14) Punctures of the elytra much larger at the sides. | |
| 4 (7) Base of the pronotum margined. | |
| 5 (6) Oval, not very convex | <i>birmanicus</i> , Gorh., p. 372. |
| 6 (5) Very broad and convex | <i>gravidus</i> , sp. n., p. 373. |
| 7 (4) Base of the pronotum not margined. | |
| 8 (9) Dorsal striæ not very finely punctured | <i>castaneus</i> , Gerst., p. 374. |
| 9 (8) Dorsal striæ very finely punctured. | |
| 10 (13) Club of the antenna black. | |

- 11 (12) Club of the antenna as long as the remainder *madurensis*, sp. n., p. 374.
- 12 (11) Club of the antenna shorter than the remainder *tomentosus*, Gerst., p. 375.
- 13 (10) Club of the antenna not black *nietneri*, Gerst., p. 375.
- 14 (3) Elytral punctures not much larger at the sides.
- 15 (16) Base of the pronotum not margined. *peguensis*, Gorh., p. 376.
- 16 (15) Base of the pronotum finely margined.
- 17 (18) Orange-coloured, with black antennal club *nilgircus*, sp. n., p. 377.
- 18 (17) Orange-coloured, with black dorsal patches *nobilis*, Gerst., p. 377.
- 19 (2) Elytra highly convex, not distinctly longer than their combined width.
- 20 (21) Prothorax transverse, but relatively rather long *sicarius*, Gorh., p. 378.
- 21 (20) Prothorax very short.
- 22 (23) Colour uniformly reddish-brown .. *vallatus*, Gerst., p. 379.
- 23 (22) Colour reddish-brown, with the club of the antenna black *russatus*, Gorh., p. 380.
- 24 (1) Elytra without regular rows of single punctures.
- 25 (26) Base of the pronotum excised on each side [p. 381.
quadrisignatus, Gorh.,
- 26 (25) Base of the pronotum not excised on each side.
- 27 (32) Body uniformly tawny or reddish.
- 28 (31) Legs pale.
- 29 (30) Elytra with rows of irregular punctures; tip of the antenna not pale *fuscicornis*, Gorh., p. 382.
- 30 (29) Elytra without rows of irregular punctures; tip of the antenna pale. *dentipes*, sp. n., p. 382.
- 31 (28) Legs black *nigripes*, Arrow, p. 383.
- 32 (27) Middle of each elytron black.
- 33 (34) Subhemispherical; pronotum without basal sulcus *seminalis*, sp. n., p. 384.
- 34 (33) Not subhemispherical; pronotum with basal sulcus.
- 35 (36) Very convex; antennæ more than half as long as the body *hilaris*, sp. n., p. 384.
- 36 (35) Not very convex; antennæ less than half as long as the body *bicolor*, Gerst., p. 385.

322. *Stenotarsus birmanicus*.

Stenotarsus birmanicus, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 297.

Orange-tawny, with the antennæ reddish, except at the base, and their club black.

Small, elongate-oval, not very convex, entirely clothed with short erect yellowish pubescence. The antennæ are short, the club very loosely articulated, as long as the seven preceding joints together, the terminal joint oval and as long as the two

preceding joints, which are strongly transverse, joints 2 to 8 very short and compact. The eyes are small and widely separated. The pronotum is two and a half times as wide as its length in the middle, very finely and sparingly punctured, with very wide elevated lateral borders, a little narrowed behind; the outer margins are gently rounded, all the angles rectangular, the front ones very prominent but not sharp, the base finely margined and the foveæ deep and continued to the middle of the pronotum. The scutellum is smooth and triangular. The elytra bear straight, complete and regular rows of single punctures, those in the outer rows large and deep, those upon the disc finer and less apparent. The elytra are of the same width as the pronotum at the shoulders, and the sides are almost parallel to beyond the middle.

Length, 2.5–3 mm.; *breadth*, 1.75 mm.

BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Fea*, Dec.); Pegu, Palon (*L. Fea*, Aug., Sept.).

Type in the Genoa Museum; co-type in M. René Oberthür's collection.

323. *Stenotarsus gravidus*, sp. nov.

Reddish-brown, with the legs paler and the antennæ black, except at the base, and clothed with long yellowish hair.

Very broadly oval and highly convex, with rather long legs and antennæ. The pronotum is broad, minutely and not closely punctured, with fairly broad and slightly hollowed raised borders, tapering behind; the outer edges are rounded in front and straight and slightly divergent behind, the base has a fine marginal stria close to the edge, and the lateral foveæ are very deep and round, the base having a triangular lobe in front of each. The scutellum is smooth and broad. The elytra bear longitudinal rows of round shallow punctures, fine and scanty upon the inner part and becoming progressively larger externally, the outermost rows being very large and irregularly spaced; the intervals are very finely and not closely punctured. The lower surface is strongly punctured, the abdomen and elytral epipleurae very coarsely. The 2nd joint of the antenna is very short, 3 to 7 elongate, 8 a little longer than it is broad, 9 to 11 not very large, the terminal joint oval and a little shorter than the preceding two together.

Length, 4 mm.; *breadth*, 3 mm.

S. INDIA: Nilgiri Hills, Karkur Ghat, 2000 ft. (*H. L. Andrewes*, July).

Type in the British Museum.

This has a rather deceptive resemblance to *S. nilgircus*, which inhabits the same region. It is similar in size and shape, but the hairy clothing is longer and coarser, the rows of punctures at the sides of the elytra are composed of fewer and larger punctures and the lower surface is much more coarsely punctured.

324. *Stenotarsus castaneus*.

Stenotarsus castaneus, Gerst.,* Mon. Endom. 1858, p. 340.

Uniformly tawny or reddish-chestnut colour, including the legs and antennæ, and rather thickly clothed with golden hair, erect upon the upper surface.

Broadly oval, convex and shining, with the antennæ not long, the last three joints equal in length to the preceding six, the 9th and 10th transverse and together equal in length to the last, which is broadly oval. The pronotum is about two and a half times as wide as its length in the middle, fairly strongly and closely punctured except in the lateral grooves, with broad raised borders which do not narrow behind, the lateral margins strongly rounded in front and straight and slightly divergent behind, the front angles obtuse and the hind angles rectangular, the base not margined and the lateral foveæ short and parallel. The scutellum is broadly triangular. The elytra bear regular rows of punctures, those in the inner rows moderately fine and close and the outer series large, deep and placed rather far apart, the intervals being finely and not sparingly punctured. The prosternal process is a little dilated and truncate behind, the mesosternum is rather broad and the metasternum finely and rather sparingly punctured, margined but scarcely sinuate in front. The 1st ventral segment is finely punctured and bears also large, deep and irregularly distributed pits; the succeeding segments are closely punctured.

Length, 4-5 mm.; breadth, 3-3.5 mm.

CEYLON: Balangoda, 1776 ft. (*G. Lewis*, March); Madulsima, 900 ft. (*T. Bainbrigge Fletcher*, Dec.); Kelani Valley, near Colombo (*W. Braine*); Kalupahani; Peradeniya (*Thwaites*).

Type in the British Museum.

The type was originally in the Deyrolle Collection and was acquired by Gorham. A specimen from Nietner's collection and determined by Gerstaecker is in the Berlin Museum.

325. *Stenotarsus madurensis*, sp. nov.

Bright orange-yellow, with the antennæ black, except at the base, and fairly closely clothed with rather long yellowish hair, erect upon the upper surface.

Shortly oval, moderately convex and rather shining. The pronotum is minutely and evenly punctured, strongly transverse, with the sides rounded in front, straight and divergent behind, the raised borders not very broad, tapering behind, the front angles blunt, the hind angles rectangular, the base not margined and the lateral foveæ deep and oblique. The elytra bear regular rows of single punctures not very closely set, the inner rows fine and the outer rows larger and deeper; the intervals are finely, not densely, punctured. The metasternum is minutely and sparsely punctured, the abdomen more strongly and closely. The antennæ are not long, but the last three joints are together about

equal in length to the rest, large and loosely articulated, the terminal joint oval and much shorter than the two preceding together.

Length, 4.5 mm.; *breadth*, 3 mm.

S. INDIA: Madura.

Type in the British Museum; co-type in the National Hungarian Museum.

S. maulurensis is rather shorter in form than *S. peguensis* and the upper surface is more shining, with fewer and larger punctures, especially at the sides of the elytra, and longer and less dense hairy clothing. It is extremely like *S. tomentosus*, but a trifle shorter, and the club of the antenna is relatively longer, being distinctly longer than joints 2 to 8 combined.

326. *Stenotarsus tomentosus*.

Stenotarsus tomentosus, Gerst.,* Mon. Endom. 1858, p. 341.

Reddish-chestnut or tawny, with the club of the antenna black, and moderately densely clothed with golden pubescence, erect upon the upper surface.

Broadly oval, convex, moderately shining, with the antennæ not long, the last three joints rather loosely connected and together about as long as the preceding seven, the 9th slightly elongate, the 10th about as long as it is wide and the 11th about one and a half times as long. The pronotum is more than twice as wide as its length in the middle, finely and not closely punctured, with moderately wide raised borders, narrowing behind, the lateral margins strongly rounded in front, straight and diverging behind, the front angles very blunt, the hind angles produced and sharp; the base is not margined and the lateral foveæ are strongly oblique. The scutellum is triangular and smooth. The elytra bear regular rows of well-marked but not close-set punctures, those in the lateral rows being much larger and deeper than the rest; the intervals are finely and not very closely punctured. The prosternal process is short and rounded behind, the mesosternum moderately wide, the metasternum margined and feebly sinuate in front and finely punctured, the abdomen more strongly punctured beneath.

Length, 5 mm.; *breadth*, 3.5 mm.

Ceylon (*W. Braine*).

Type in the Berlin Museum; co-types in the Stettin and Copenhagen Museums.

Dr. H. Kuntzen, of the Berlin Museum, has kindly submitted the type to me for examination.

327. *Stenotarsus nietneri*.

Stenotarsus nietneri, Gerst.,* Mon. Endom. 1858, p. 339.

Reddish-chestnut or tawny, including the antennæ and legs, moderately thickly clothed with short golden pubescence, erect upon the upper surface.

Broadly oval, convex, shining, with moderately long antennæ, of which the very loosely-connected last three joints are equal in length to the remaining eight; the 10th is about as long as it is wide and the 11th about twice as long. The pronotum is about two and a half times as wide as its length in the middle, finely and closely punctured, except in the lateral furrows, with moderately wide raised borders, narrowing behind, the lateral margins strongly rounded in front, straight and divergent behind, the front angles blunt, the hind angles sharp; the base is not margined and the lateral foveæ are strongly oblique. The scutellum is triangular. The elytra have complete and regular rows of well-marked punctures, the lateral ones much larger and deeper than those in the dorsal rows; the intervals are finely and densely punctured. The prosternal process is short, rounded behind, the mesosternum smooth, the metasternum margined and feebly sinuate in front and, with the abdomen, finely and not closely punctured.

Length, 5 mm.; *breadth*, 3.5 mm.

CRYLON: Ramboda (*Nietner*).

Type in the Berlin Museum of Zoology.

The locality given above is that of a specimen in the British Museum Collection taken by Nietner, probably at the same time as the type, of which the exact habitat is not recorded, but which I have been enabled to compare with the British Museum specimen by the kindness of Dr. Kuntzen.

328. *Stenotarsus peguensis*.

Stenotarsus peguensis, Gorb., *Ann. Mus. Civ. Genova, xxxvi, 1896, p. 297.

Tawny-yellow, with the club of the antenna black, and rather thickly clothed with short golden hair, erect upon the upper surface.

Oval and moderately convex, not very shining, with short legs and antennæ. The very long and loosely-jointed club of the latter is as long as the eight remaining joints, the terminal joint is about half as long again as the 9th and the 10th is strongly transverse. The pronotum is nearly three times as wide as its length in the middle, finely and closely punctured, with rather wide elevated borders, narrowing behind, the lateral margins evenly rounded, strongly diverging behind, the front angles blunt and the hind angles acute; the base is not margined and the foveæ have the form of sharp obliquely sinuous notches in the hind margin. The scutellum is triangular, smooth and shining. The elytra bear regular rows of single minute punctures, the exterior rows a very little larger and deeper than those upon the disc; the outer margins are very slightly rounded, the widest part being near the middle. The prosternal process is short, rounded behind, the mesosternum moderately wide, the metasternum

margined and very slightly sinuate at its anterior border and, with the abdomen, rather closely and strongly punctured.

Length, 5-5.5 mm.; *breadth*, 4 mm.

UNITED PROVINCES: Siwalik Forest Division, Lachiwala, Dehra Dun. BURMA: Pegu, Palon (*L. Fea*, Aug., Sept.). TENASSERIM: Plapoo (*L. Fea*, April).

Type in the Genoa Museum.

Taken beneath the bark of Sal trees at Dehra Dun.

Although in bad condition, a specimen taken by Mr. T. Bainbrigge Fletcher at Santikoppa in North Coorg (Mysore) in May appears to belong to this species, in which case the distribution is surprisingly wide.

329. *Stenotarsus nilgiricus*, sp. nov.

Orange-tawny above and beneath, including the legs, with the club of the antenna and two or three joints preceding it black, and densely clothed with long erect yellowish hair.

Very broadly oval and highly convex, with rather long legs and antennæ. The pronotum is broad, finely and moderately closely punctured, with fairly wide raised margins tapering a little behind; the outer edges are strongly rounded in front and straight and slightly divergent behind, the base is rounded in the middle and has a fine marginal stria close to the edge, and the lateral foveæ are deep and punctiform, the base having a triangular tubercle in front of each. The scutellum is almost semicircular. The elytra bear longitudinal rows of punctures, which are minute upon the inner part and only a little larger externally, the lateral rows, except the outermost, being very short and rather scattered; the intervals are minutely punctured. The lower surface of the body is very finely and closely punctured. The 2nd joint of the antenna is globular, joints 3 to 7 are slightly elongate, 8 a very little longer than it is wide, the club large and loose and the terminal joint as long as the two preceding together.

Length, 5 mm.; *breadth*, 3.5 mm.

S. INDIA: Nilgiri Hills (*H. L. Andrewes*).

Type in the British Museum.

330. *Stenotarsus nobilis*.

Stenotarsus nobilis, Gerst., Mon. Endom. 1858, p. 338.

Stenotarsus plagiatus, Gorb., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 226 (nec op. cit. xxii, 1885, p. 525).

Orange-red, with the last four or five joints of the antenna, a large semicircular patch upon the pronotum, occupying the basal margin and extending almost to the front margin, a large transverse patch upon the anterior half of each elytron, not quite reaching the inner or outer margin and still more distant from the base, and a smaller rounded patch before the apex, all black.

It is oval in shape, moderately elongate and entirely clothed

with a very fine, erect, golden pubescence. The antennæ are not long, the club is equal in length to the six preceding joints, the terminal joint elongate-oval and as long as the two preceding joints, which are transverse. The eyes are large and separated by a space about twice their radius. The pronotum is finely and closely punctured, about two and a half times as wide as its length in the middle, the lateral borders are very broad and flat, not very strongly elevated, a little broader in front but scarcely tapering behind, the lateral margins strongly rounded in front, nearly straight and parallel behind, the front angles strongly produced but not sharp, the hind angles right angles, the base very finely margined and the foveæ not deep and not attaining the middle of the pronotum. The elytra bear straight and regular rows of fine close single punctures, the external rows rather less fine and close than the discoidal ones; the shoulders are not prominent and the broadest part of the body is at the middle of the elytra. The legs are fairly stout.

Length, 4–6 mm.; *breadth*, 3–4 mm.

TENASSERIM: Victoria Point (*E. T. Atkinson*); Malewoon (*L. Fea*, July, Aug.). MALAY PENINSULA. JAVA.

Type in the Copenhagen Museum.

This form was recorded by Gorham in 1896 under the name of *S. plagiatus*, Gorh., but, although the latter (from Sumatra) is perhaps only a variety of *S. nobilis*, Gerst., the specimens from Tenasserim are of the typical form described by Gerstaecker from the Malay Peninsula.

331. *Stenotarsus sicarius*.

Stenotarsus sicarius, Gorh.,* *Proc. Zool. Soc. Lond.* 1886, p. 161.

Entirely black and clothed, not very densely, with pale yellow setæ, erect and evenly distributed over the whole upper surface.

Short, rotund and highly convex, but with the pronotum not very short nor very broad at the base. The legs are rather long, and the antennæ very long (nearly two-thirds as long as the body) and very loosely articulated. The upper surface is rather shining. The pronotum is rather strongly, but not very closely, punctured, scarcely twice as broad as it is long, with the sides parallel in the posterior half, gently rounded and contracted in front, the front angles blunt and the hind angles acutely produced; its upper surface is highly convex, depressed only near the four angles, and the lateral borders are rather narrow and not strongly elevated internally; the base is not margined and the lateral foveæ are deep conical pits. The elytra are globose, scarcely longer than wide, with regular rows of strong punctures, the intervals bearing very fine irregular setigerous punctures. Joints 1 to 7 of the antenna are elongate, the 10th strongly transverse, the two preceding and the last as long as wide, and the three terminal joints very loosely articulated. The lower surface is strongly punctured. The prosternal process is rather narrow, the mesosternum

broadly and not deeply excavated, the metasternum strongly margined in front.

Length, 3 mm.; *breadth*, 2 mm.

CEYLON: Horton Plains, 6000 ft. (*G. Lewis*, March).

Type in the British Museum.

Only a single specimen is known.

332. *Stenotarsus vallatus*.

Stenotarsus vallatus, Gerst.,* Mon. Endom. 1858, p. 342; Gorh., Proc. Zool. Soc. Lond. 1886, p. 161.

Testaceous, or reddish-testaceous, with the legs and the terminal part of the antennæ paler, and entirely clothed with a moderately long golden pubescence, which is stiff and erect upon the upper surface.

Hemispherical, very convex and shining. The head and pronotum are minutely and not very closely punctured; the latter has very broad raised lateral borders, which are slightly hollowed and taper from the front to the hind angles, the sides strongly rounded in front and nearly straight behind, where they are feebly divergent, the front angles strongly produced but completely rounded, the hind angles nearly right angles, the base very gently curved, with a fine marginal stria close to the edge, the lateral foveæ minute, with a rather feeble longitudinal continuation. The elytra are minutely and unequally punctured, with seven or eight well-marked but incomplete longitudinal rows of larger punctures; they are of the same width at the base as the pronotum, to which they are closely co-adapted. The prosternal process is broad, parallel-sided and truncate at the end; the mesosternum is very short and broad, with a broad, deep excavation in front to receive the prosternal process. The metasternum and abdomen are closely and finely punctured, the former with a straight marginal groove and a less deep arcuate one behind it. The antennæ are moderately long and stout, gradually thickening from base to tip, joints 3 to 6 slightly elongate, 7, 8 and 9 about as long as they are wide, 10 distinctly transverse and 11 very little longer than it is wide and truncate at the tip.

♂. The raised border of the pronotum is only a little elevated above the general surface, especially in front. The antennæ are nearly as long as the elytra and considerably longer than those of the female. The legs also are distinctly longer and the hind tibia is slender and sinuous, strongly incurved and hollowed in its posterior half, with the inner margin produced into a sharp terminal spur.

♀. The lateral borders of the pronotum slope steeply, being very strongly elevated internally, so that the sides of the disc adjoining appear deeply hollowed.

Length, 3-3.5 mm.; *breadth*, 2.5-3 mm.

CEYLON: Kandy (*G. E. Bryant*, June, July); Dikoya, 3800 to

4200 ft. (*G. Lewis*, Dec., Jan.); Kalupahani, Haldummulle; Matale (*R. Senior-White*, April).

Type in the Berlin Museum.

The original series described by Gerstaecker have been kindly lent me for comparison by Dr. Kuntzen.

Gerstaecker appears to have been mistaken in supposing that both sexes were known to him, his description applying to the female alone. That sex seems to be more abundant than the male, but both were taken together by Mr. Bryant. This species has been found on grass by Mr. R. Senior-White.

333. *Stenotarsus russatus*.

Stenotarsus russatus, Gorb.,* Trans. Ent. Soc. Lond. 1874, p. 446; id., Proc. Zool. Soc. Lond. 1886, p. 161.

? *Stenotarsus ceylonicus*, Motsch., Bull. Soc. Nat. Mosc. xxxix, 1886, p. 398.

Deep reddish-brown, with the antennæ black, except at the base and sometimes the extreme apex, and entirely clothed with a moderately long golden pubescence, which is stiff and erect upon the upper surface.

Hemispherical, very convex and shining. The head and pronotum are rather finely punctured. The latter is about twice as broad at the base as it is long, with the sides strongly rounded in front and nearly straight and feebly divergent behind, with broad, strongly elevated lateral borders, the front angles very blunt and the hind angles sharp and closely co-adapted to the shoulders of the elytra; the base is gently rounded, with a fine marginal stria and deep conical lateral foveæ. The scutellum is strongly transverse, smooth and shining. The elytra bear regular rows of large punctures, and the intervals are irregularly and more finely punctured. The antennæ are rather stout, gradually thickening from base to tip, but with a well-marked three-jointed and loosely-articulated club, of which the two basal joints are strongly transverse and the terminal one very large and a little longer than it is wide. The lower surface is rather finely and evenly punctured, the prosternal process rather broad and the metasternum strongly margined in front.

♀. The lateral borders of the pronotum are very strongly elevated, so that the sides of the disc appear deeply excavated.

Length, 2.5-3.5 mm.; *breadth*, 2-2.5 mm.

CEYLON: Colombo (*G. Lewis*, April); Ramboda, 3800 ft. (*Nietner*); Matale, Suduganga (*R. Senior-White*, March).

Type in the British Museum.

Found "on roses" by Mr. R. Senior-White.

The male will probably be found to possess distinctive features similar to those of *S. vallatus*, to which this species is very closely related. It is very likely that *S. ceylonicus* of Motschulsky is identical with the present insect, but Motschulsky's type being probably no longer in existence and his description too meagre

for the recognition of his species, that name must of necessity lapse.

334. *Stenotarsus quadrisignatus*.

Stenotarsus quadrisignatus, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 298.

Straw-coloured, with the antennæ reddish in the middle, the two basal joints pale and the last four or five black. A large semicircular patch situated at the base of the pronotum and extending to within a short distance of the front margin, a round spot upon the elytral suture a little behind the scutellum and a larger one upon the anterior half of each elytron, rather farther from the inner than from the outer margin, are also black.

Very broadly oval, nearly hemispherical, convex and moderately shining, entirely but not thickly clothed with yellow hair,

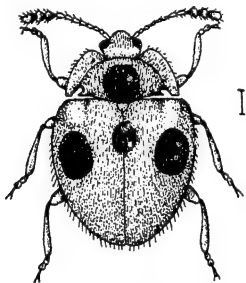


Fig. 70.—*Stenotarsus quadrisignatus*.

erect upon the upper surface. The antennæ are of moderate length, with the joints more or less elongate, except the 2nd, 8th and 9th, the loosely articulated club nearly as long as the preceding six joints and the oval terminal joint not quite as long as the two preceding. The pronotum is almost semicircular in shape, finely punctured upon the disc and the lateral borders, which are flat, very wide in front and narrowing to about one-third of the width at the hind angles; the lateral margins are evenly rounded, slightly diverging behind, the front angles blunt and the hind angles almost right angles; the base is not distinctly margined, the foveæ are minute and punctiform and on each side there is a deep and narrow oblique excision immediately within the raised margin. The scutellum is smooth and shining and rather broad. The elytra are distinctly but unevenly punctured, the punctures having a tendency to collect into longitudinal bands; they are strongly rounded at the sides, widest a little behind the shoulders, which are not prominent, and a very little attenuated behind. The prosternal process is truncate

behind and margined on each side, the mesosternum is very short and the metasternum is sparingly punctured and has a strongly-rounded and raised anterior margin. The abdomen consists of six visible segments ventrally.

Length, 3 mm.; *breadth*, 2.5 mm.

BURMA: Teinzo (*L. Fea*, May).

Type in the Genoa Museum.

Only a single specimen is known. The deep excision upon each side of the base of the pronotum, strangely overlooked in the original description, is a very remarkable feature. The deep lateral grooves in the females of *S. vallatus* suggest the possibility that these also may be peculiar to one sex.

335. *Stenotarsus fuscicornis*.

Stenotarsus fuscicornis, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 297.

Orange-tawny, with the club of the antenna black and the footstalk deep red-brown, with the exception of the basal joint, which is yellow.

Broadly ovate and strongly convex, entirely clothed with golden hair, which is erect and moderately long on the upper surface. The antennæ are not very short, the club equal in length to the six preceding joints, the terminal joint oval and nearly as long as the two preceding, which are transverse. The eyes are not large, separated by a rather wide interval. The pronotum is two and a half times as wide as its length in the middle, finely and sparsely punctured, with wide, strongly elevated, lateral borders, narrowing from the front backwards and a little hollowed behind; the outer margins are very strongly rounded in front, straight and parallel behind, the front angles obtuse, the hind angles right angles, the base finely margined and the foveæ deep, oblique and short. The scutellum is smooth and shining. The elytra are slightly prominent at the shoulders and bear imperfect longitudinal rows of irregular but rather crowded punctures, not arranged singly. The prosternal process is rather long, truncate behind and margined at the sides, and the metasternum and first sternite are very finely punctured.

Length, 5 mm.; *breadth*, 3.5 mm.

TENASSERIM: Meetan (*L. Fea*, April); Malewoon (July, Aug.).

BURMA: Pegu, Palon (*L. Fea*, Aug., Sept.). INDO-CHINA: Luang Prabang, Paklung (*R. Vitalis de Salvaza*, Dec., Jan.). SIAM: Renong (*W. Doherty*).

Type in the Genoa Museum.

336. *Stenotarsus dentipes*, sp. nov.

Chestnut-red, with the antennæ black, except the terminal half of the apical joint, which is pale yellow, and the whole surface clothed with fine and close, recumbent, yellowish hair.

Very broadly oval and convex, with rather long and slender antennæ. The pronotum (with the head) is semicircular in outline, finely and closely punctured, with very broad raised margins, a little narrowed posteriorly, where the lateral grooves are very deeply excavated; the base is rounded in the middle and a deeply incised marginal line, slightly angulate in the middle, cuts off a wide and nearly smooth border. The scutellum is smooth and broadly triangular. The elytra are closely, evenly and rather finely punctured, without trace of linear arrangement; the shoulders exactly coincide with the hind angles of the pronotum. The first seven joints of the antenna are slightly longer than wide, the 8th globular and the club rather narrow, the terminal joint elongate-oval, almost as long as the two preceding. The lower surface is finely and closely punctured; the prosternal process is long, flat and spatuliform, with an incised marginal loop, open at its anterior end. The mesosternum is oblique and almost entirely covered by the prosternum, which reaches the anterior margin of the metasternum. The metasternum has a strongly raised anterior margin, with a slight thickening in the middle. The first sternite is as long as the remaining four.

The hind femur has a conspicuous hooked tooth (probably in the male alone) beyond the middle of the inner edge.

Length, 3 mm.; *breadth*, 2 mm.

TENASSERIM: Tavoy (*W. Doherty*).

Type in the British Museum.

Although superficially an ordinary species of rather short rotund aspect, this is a peculiar and isolated form. The prosternum is produced to meet the edge of the metasternum, practically concealing the mesosternum, and the sharp hooked tooth upon the hind femur is a feature, probably sexual, only previously known in one member of this large genus (*S. femoralis*, Arrow, from Java).

337. *Stenotarsus nigripes*.

Stenotarsus nigripes, Arrow, Trans. Ent. Soc. Lond. 1920, p. 55.

Chestnut-red, with the lower surface, antennæ and legs entirely black and clothed with moderately close yellowish setæ, erect on the upper surface.

Oval, convex and shining, with the legs and antennæ long and slender, the two basal joints of the latter globular, the 2nd to the 8th progressively increasing in length, the last three extremely loosely articulated, equal in length to the preceding five, 9 slightly elongate, 10 as long as it is wide, and 11 oval and one and a half times as long as wide. Pronotum two and a half times as wide as it is long in the middle, very finely and sparsely punctured, with not very wide raised borders, narrowed behind, the sides rounded in front, nearly straight and parallel behind, the front angles obtuse, the hind angles rectangular, the base bordered by a deep sulcus parallel with the hind margin, and the lateral

foveæ large, deep, crescent-shaped and transverse. Scutellum slightly transverse, obtusely angled. Elytra coarsely and irregularly punctured, without rows of punctures, but with those at the sides a little larger and divided longitudinally by a smoother, finely punctured, band. Prosternal process narrow, rounded at the extremity and deeply margined, mesosternum smooth and a little depressed, metasternum and abdomen closely and moderately strongly punctured. All the tibiæ are slender in the basal part and widest a little before the extremity.

Length, 4 mm.; *breadth*, 3 mm.

ASSAM: Manipur (*W. Doherty*).

Type in the British Museum: only a single specimen is known.

338. *Stenotarsus seminalis*, sp. nov.

Testaceous-yellow, with a transversely oval patch extending from front to hind margin of the pronotum, the central part of each elytron, the club and adjacent joints of the antenna and the metasternum and basal sternite of the abdomen black.

Almost hemispherical in shape, moderately shining and rather closely clothed with erect greyish hair. The eyes are rather small and far apart. The pronotum is rather finely and closely punctured, with its sides evenly rounded, the raised borders very broad in front and tapering behind, all the angles bluntly prominent, the base very finely margined at the sides but not in the middle, and the basal foveæ very deeply and curvilinearly incised. The scutellum is smooth. The elytra are strongly punctured and have a few rather ill-defined longitudinal lines formed by larger, irregularly seriate, punctures. The mesosternum is broad, the metasternum is very finely and sparingly punctured in the middle, and the basal sternite of the abdomen is rather closely punctured. The trochanters are large and prominent and the tibiæ slender. The antennæ are slender, joints 2 to 8 almost equal in length, the last three large and very loosely-articulated and together equalling the preceding six in length, the 9th and 10th about as long as broad and the 11th about half as long again.

Length, 3 mm.; *breadth*, 2.5 mm.

UNITED PROVINCES: Dudhatoli, Garhwal, 9000 ft. (*H. G. Champion*, June); Dehra Dun (*N. C. Chatterjee*, Aug.).

Type in the British Museum.

A specimen was taken on Bamboo by Mr. N. C. Chatterjee.

339. *Stenotarsus hilaris*, sp. nov. (Pl. I, fig. 4.)

Bright red, with the middle of the pronotum and of each elytron black and clothed with long, erect but not very dense, yellow hair.

Very short and convex and rather shining, with long slender legs and antennæ. The pronotum is short and broad, very

lightly and sparingly punctured, with the raised borders moderately wide, the lateral margins strongly rounded, nearly straight and parallel at the base, the front angles very blunt, the hind angles rectangular, the base margined and the lateral foveæ deep and not produced forwards. The elytra are short and very convex, with very distinct longitudinal lines of large and rather irregular shallow punctures, the intervals very minutely and sparsely punctured. The lower surface is sparingly punctured and the punctures are fine, except at the sides of the 1st ventral sternite. The antennæ are a little more than half the length of the body, with the 2nd joint short, the 3rd to 7th elongate, the 8th globular and the last three very loosely articulated and equal in length to the preceding five.

Length, 4.5 mm.; *breadth*, 3.5 mm.

ASSAM: Garo Hills, above Tura, 3000-3900 ft. (*S. Kemp*, Aug.).

Type in the British Museum; co-type in the Indian Museum, Calcutta.

This has the coloration, but not the hemispherical shape, of *S. seminalis*. It is much larger than either that or *S. bicolor* and has much longer antennæ, more distinct lines of elytral punctures and more finely punctured intervals. The coloration is also similar to that of *S. nobilis*, but the elytra are much shorter and less finely punctured and the clothing is much longer and more erect.

340. *Stenotarsus bicolor*.

Stenotarsus bicolor, Gerst.,* Mon. Endom. 1858, p. 343.

Stenotarsus indianus, Gorb.,* Trans. Ent. Soc. Lond. 1874, p. 446; id., Ann. Soc. Ent. Belg. xxxix, 1895, p. 330 (new syn.).

? *Stenotarsoides alferi*, Pic, Mélanges Exotico-Entom. xxxvi, 1922, p. 9; Arrow, Trans. Ent. Soc. Lond. 1922, p. 485.

Stenotarsoides medianus, Pic, l. c.

Bright testaceous-red, with the discoidal part of each elytron black and the antennæ brown, except the basal part.

Broadly oblong-oval, a little depressed and entirely clothed with silvery pubescence, which is moderately long and erect upon the upper surface. The head is strongly punctured, the pronotum more finely, with the sides almost smooth, the raised borders very broad and scarcely tapering behind, the lateral margins strongly and entirely rounded and a little contracted behind, the front angles produced and blunt, the hind angles sharp and rectangular, the base nearly straight and deeply sulcate, the lateral foveæ curvilinear and deep. The elytra are of the width of the pronotum at the shoulders, and dilate gently from there to the middle; they are finely and rather indefinitely punctured, with about seven irregular longitudinal rows of larger punctures, which break up upon the posterior part. The legs are slender but not long, and the 2nd tarsal joint forms a long but not broad lobe. The antennæ are short, joints 2-8 beadlike, short, the 3-jointed

club large, abrupt and loosely articulated, the terminal joint equal in length to the two preceding it, which are transverse.

Length, 3-3.5 mm.; *breadth*, 2-2.5 mm.

UNITED PROVINCES: Dehra Dun (*C. F. C. Beeson*). CENTRAL PROVINCES: Nagpur, 1000 ft. (*E. A. D'Abreu*, Aug.). BENGAL: Sarda (*F. W. Champion*); Chapra; Calcutta (*E. T. Atkinson*). BURMA: Tharrawaddy (*G. Q. Corbett*). TENASSERIM (*Helfer*). INDO-CHINA.

Type in the Berlin Zoological Museum; that of *S. indianus* in the British Museum.

This species is sometimes attracted to light.

So far as any idea of *Stenotarsoides alferi* can be formed from the few words which serve for a description with M. Pic, his insect (from the "Indes") is this common species. He compares it with "*medianus*" Gorh., no doubt meaning *indianus*, but has probably failed to recognise Gorham's species.

Genus **ATRICHONOTA**, nov.

TYPE, *Atrichonota flavipennis*, sp. nov.

Range. Burma.

Body oval, convex, very smooth, entirely without hairy clothing above and beneath. Head rather deeply sunk into the prothorax, with the eyes prominent, small and far apart, not very coarsely faceted. Clypeus short and rectangular. Mentum transversely rectangular. Ligula very short and broad, with prominent membranous lateral lobes, the front margin nearly straight; the labial palpi contiguous, very short and stout. Maxilla with the inner lobe slender, shorter than the outer, the latter triangular, broad and nearly straight at the end; palpus moderately long and acuminate. Mandible subquadrate, with the tip short but very acute, not bifid. Pronotum without stridulatory membrane, margined at the front and sides but not at the base, the lateral margins not very wide, distinctly elevated, and the basal foveæ long, deep and slightly convergent. Scutellum triangular. Elytra not prominent at the shoulders, with fairly wide epipleuræ anteriorly. Front coxæ rather widely separated; the prosternal process broad, dilating a little to the extremity, which is rounded, and finely margined at the sides and extremity. Mesosternum very short and broad between the middle coxæ, trapeziform, excavated in front, narrowing to the width of the prosternal process in front. Metasternum margined in front. Antennæ slender, with the 1st joint scarcely larger than those following it and the last three long, narrow, very loosely connected, slightly asymmetrical.

This is a very peculiar aberrant genus, remarkable especially for the entire absence of the hairy clothing on the upper surface, which is a feature highly characteristic of the whole of the STENOTARSINI with this exception. The slender antennæ, with their very long and narrow club, and the unusual shape of the mesosternum are features which will also enable it to be easily

recognized. The glossy surface and the coloration, although not the shape, which is more oval and convex, give it a resemblance to the Indian species of the genus *Endomychus*, which suggests that mimicry may possibly account for its abnormal features.

341. *Atrichonota flavipennis*, sp. nov.

Black and very shining, with the elytra, abdomen and tarsi bright yellow.

Ovate and very convex, with the antennæ long and the legs of moderate length. The head is moderately punctured, the pronotum very finely, shallowly and sparsely, with the borders strongly elevated but not flattened, narrowed a little behind, the outer margins gently curved, the front angles prominent and very blunt, the hind angles acute, the base gently trisinate, the

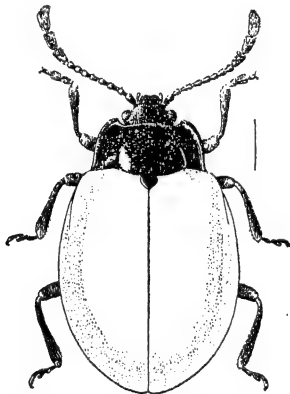


Fig. 71.—*Atrichonota flavipennis*.

lateral foveæ deep, nearly parallel, not quite reaching the middle of the pronotum. Elytra finely, rather sparingly but evenly punctured, without trace of linear arrangement. The prosternum bears a very few fine punctures, the metasternum is finely punctured in the middle and almost smooth at the sides, and the abdomen is finely and sparingly punctured and very thinly clothed with minute setæ; the basal sternite is longer than the three following together. All the joints of the antennæ are more or less elongate, the 2nd and 8th very slightly, the 9th and 10th are about one and a half times as long as they are wide, and the terminal joint is about twice as long as it is wide, with its apical margin oblique.

Length, 4 mm.; *breadth*, 2.5 mm.

BURMA: Ruby Mines (*W. Doherty*).

Type in the British Museum.

The coloration of this little insect is that of *Endomychus bicolor*

and *E. divisus*, but it is much more convex and regularly oval in shape. The raised thoracic borders are not wide, but considerably wider than in the genus *Endomychus*, the hind margin is without a sulcus and the front margin has a fine stria.

Genus DANAË.

Danaë, Reiche, in Ferret & Galinier, Voyage en Abyssinie. iii, 1847, p. 408; Chap., Gen. Col. xii, 1876, p. 114; Arrow, Trans. Ent. Soc. Lond. 1920, p. 35.

Ediarthrus, Gerst., Mon. Endom. 1858, p. 344.

Rhabduchus, Gorh., Ent. Month. Mag. ix, 1873, p. 257.

Coniopoda, Gorh., op. cit. p. 205.

TYPE, *Danaë rufula*, Reiche (Abyssinia).

Range. Africa, Asia, North America.

Body of oblong shape, not very convex, clothed with short pubescence above and below, with fairly long and stout legs and antennæ. Basal joint of the antenna oval, stout, 2nd joint shorter, 3rd elongate, the last three larger, forming a very loosely-articulated, symmetrical club. Eyes large and very prominent, coarsely faceted. Mandible short, rounded, not produced at the tip, which is unequally bifid, the apical tooth very sharp. Lobes of the maxilla very short, the outer longer than the inner, scarcely dilated at the end; palpus much longer, the terminal joint long and pointed. Mentum quadrate; ligula short, almost straight at the anterior margin, with strong lateral lobes; labial palpi elongate, moderately separated at the base, the terminal joint oval and truncate. Prothorax rather short and transverse, with broad elevated lateral margins, the base broad, closely applied to the base of the elytra, with a basal groove terminating on each side in a deeply-impressed, short lateral fovea. Scutellum short and broad, scarcely angulate. Elytra elongate, moderately convex, with curvilinear sides, the shoulders slightly tumid but not prominent laterally. Prosternum elevated and produced behind as a prominent rounded lobe. Mesosternum a little depressed in the middle and not excavated in front. Metasternum straight and narrowly margined between the middle coxæ. Abdomen with five visible ventral segments, the first as long as the three succeeding. Legs long, with the trochanters large, completely separating the coxæ and femora, the femora rather attenuated at the base and the two basal joints of the tarsus broadly lobed.

Most of the known species of this genus, the majority of them found in Southern and Eastern Africa, are remarkable for the great differences found in the two sexes. The males are usually longer than the females, owing to the enlargement of the metasternum and the first ventral segment of the abdomen and the corresponding lengthening of the elytra. The hind legs are also thrown farther back in consequence and are commonly longer and stouter. In many of the species teeth occur upon the femora or tibiae in this sex, whilst the antennæ are longer and stouter,

the club enlarged, and the 9th joint generally disproportionately swollen.

In Africa these insects are found, according to Dr. G. A. K. Marshall, at the roots of grass in moist places.

Very few specimens have hitherto been found in India, but it is probable that many species could be collected.

Key to the Species of DANAË.

- 1 (4) Legs and antennæ dark.
- 2 (3) Antennæ not very slender *ciliatipes*, Arrow, p. 389.
- 3 (2) Antennæ very slender *claudu*, sp. n., p. 390.
- 4 (1) Legs and base of the antennæ pale.
- 5 (6) Joints 1-8 of the antennæ not short
and compact; body uniformly tawny. *sericea*, sp. n., p. 391.
- 6 (5) Joints 1-8 of the antennæ very short
and compact; upper surface of the
body with black markings *ornata*, sp. n., p. 392.

342. *Danaë ciliatipes*.

Danaë ciliatipes, Arrow, Trans. Ent. Soc. Lond. 1921, p. 41.

Testaceous-red, with the antennæ and legs, except the tarsi, black, and entirely clothed above and beneath with not very dense yellow pubescence, the antennæ clothed with rather long dark hair.

Oblong in shape, moderately shining, with long but not very slender antennæ and long legs. The entire upper surface is very finely and sparingly punctured, the raised margins of the pronotum a little more closely. The pronotum is broadly transverse, its sides are gently bisinuate, the front angles blunt, the hind angles acutely produced, the base broadly lobed behind, the basal groove straight, the lateral foveæ short but deeply impressed. The scutellum is broad and obtusely pointed behind. The elytra are relatively long, not broad at the shoulders, which are excavated in front to receive the hind angles of the pronotum, rounded at the sides, broadest a little before the middle, slightly tapering behind and separately rounded at the apices. The metasternum is more strongly and closely punctured than the upper surface, and the first sternite is distinctly but less strongly punctured.

♂. Joints 2 to 8 of the antennæ are rather compact, 9 to 11 very loose, longer than broad, 9 swollen and 11 oval. The middle femur has a broad blunt tooth at the middle of its lower edge, the hind femur is long, slender and arched, and the hind tibia slender, nearly straight and clothed on its lower face with rather long golden hairs, forming a conspicuous fringe at the inner edge. The first sternite bears a rather sharp prominence in the middle near the hind margin.

The female is not known.

Length, 4 mm.; *breadth*, 2 mm.

TENASSERIM : TAVOY (IV. Doherty).

Type in the British Museum.

343. *Danaë clauda*, sp. nov.

Testaceous-yellow, with the antennæ and legs black (except the terminal part of the tibiæ and the tarsi, which are reddish-brown), and entirely clothed with moderately long yellowish hair.

Rather long and narrow, very convex and moderately shining, with slender antennæ and legs. The pronotum is about half as wide again as it is long, with the sides gently bisinuate, the flattened margin not much wider in front than behind, the front angles nearly right angles, the hind angles acutely produced, the base not very wide, with a deep, nearly straight marginal groove, the ends of which curve forward and become parallel; the lateral

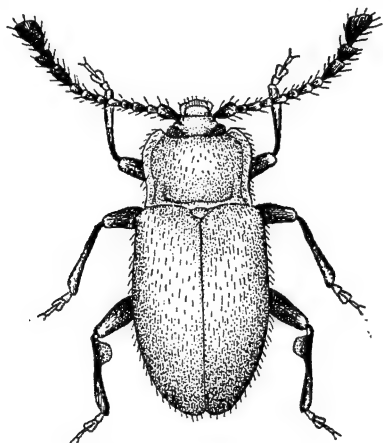


Fig. 72.—*Danaë clauda*, male.

foveæ are minute and inconspicuous. The scutellum is short and blunt at the apex. The elytra are long and rather parallel-sided, scarcely widening from the shoulders to two-thirds of their length and slightly tapering from there to the end; the punctures are moderately close and even, without trace of linear arrangement.

♂. The antennæ are very long and slender, all the joints being elongate, but the 2nd, 4th, 6th and 8th a little shorter than the rest, the 1st stout, the last three very loosely articulated, the 10th a little shorter than the 9th, the 11th about twice as long as the 10th, curved and half as wide as it is long. The hind femur is gently curved and the tibia is slightly bisinuous and bears a prominent laminar lobe at its inner edge just beyond the base. The metasternum is a little prominent in the middle, and the basal

segment of the abdomen is considerably larger than the three following together and bears just before its hind margin a median tubercle crowned with a tuft of fine hairs.

Length, 4 mm.; *breadth*, 2 mm.

SIKKIM: Ghumti, Darjeeling District, 4000 ft. (*F. H. Gravely*, July). UNITED PROVINCES: Kumaon, West Almora Division (*H. G. Champion*, June).

Type in the British Museum.

Although the male of this species differs very greatly from the same sex of *D. ciliatipes*, the females have probably a close similarity. A second specimen, from the same place but found five months later, is probably the female of *D. clauda*. It is less elongate in shape, with similar but shorter antennæ and simple legs. As in neither case is the female certainly known, it is only possible to compare the characters of the males. *D. clauda* is more elongate, the pronotum is less transverse and less dilated at the base, the elytra are a little more distinctly punctured and less shining and the shoulders not quite so prominent. The antennæ are extremely slender instead of being thickened, and the 9th joint is not at all bulbous, as is usual in the males of *Danaë*. In this latter feature there is a close approach to the genus *Saula*. The grotesque form of the hind tibiæ is paralleled in other species of both these genera, but the abdominal tubercle is a peculiar feature so far found only in this and the following species.

344. *Danaë sericea*, sp. nov.

Entirely tawny-brown, with the antennæ, except at the base, black, and clothed above and beneath with very fine close-lying silky yellow hair.

Elongate-oval, very convex, smooth and shining, with long and slender legs and antennæ. The upper surface is uniformly and very minutely punctured, each puncture bearing a fine hair. The pronotum is not very convex, transverse but not broad, the lateral margins are rather strongly bisinuate, the borders not much raised, moderately wide, the front angles very blunt, the hind angles acutely produced, the lateral foveæ short but rather strongly divergent and the base broadly margined. The elytra are highly convex, strongly rounded at the sides and not very broad at the shoulders. The lower surface is a little less finely and closely punctured and clothed with rather coarser hair.

♂. The antennæ are long and rather slender, the joints alternately long and short, the last three large and very loosely articulated, together equal in length to the preceding six, the 9th large and armed with a sharp oblique tooth at its inner edge beneath, the 11th elongate-oval. The hind femur is a little arched and the hind tibia is long and slender and bears a fringe of close golden hairs at its inner edge. The first sternite bears a longitudinal elevation, tipped with a tuft of hairs, just before the middle of its hinder edge.

The female is unknown.

Length, 3.5 mm. ; *breadth*, 2 mm.

ASSAM : Tura, Garo Hills, 1200-1500 ft.

Type in the British Museum.

Found under bark.

This is smaller, more convex and less oblong in shape than the other Indian species and is clothed with finer and closer hair above. Its colour is less red than that of *D. ciliatipes* and the legs are not black. As in that species, the hind tibiæ of the male bear a fringe at the inner edge. The tooth upon the 9th joint of the antenna and the tubercle upon the first sternite are no doubt also peculiar to the male.

345. *Danaë ornata*, sp. nov.

Yellowish-red, with a large round black patch in the middle of the pronotum, ill-defined at the edge but nearly approaching the front and hind margins and leaving wide lateral pale borders, and the whole median part of each elytron black, leaving similar borders. The club and adjacent joints of the antenna and the metasternum and 1st abdominal sternite (except at the sides) are also black.

The body is oblong in shape, moderately convex and entirely clothed above and beneath with short grey hair. The upper surface is rather closely and conspicuously punctured. The pronotum is nearly twice as wide as its length in the middle; the sides are nearly straight and parallel behind, rounded in front, the raised margins narrowing little behind, the front angles rather blunt and the hind angles right angles, the base gently rounded and strongly margined and the foveæ extending in a short oblique curve to the base. The scutellum is very short and broad. The elytra are a little broader at the base than the pronotum and dilate very slightly to beyond the middle. The prosternal process is rather long, the metasternum rather convex, the basal sternite produced in the middle and very long (longer in the middle than the metasternum or the remainder of the abdomen). The antennæ are stout, joints 2 to 8 short, compact and beadlike (the 3rd a very little longer than the rest); joints 9 to 11 large but not elongate and very loosely articulated, the 10th transverse, the 11th shortly oval.

♂. The 9th joint of the antenna is strongly swollen, ovate and a little hollowed beneath. The hind femora are long and strongly arched, the middle and hind tibiæ curved and the latter provided with a very feeble tooth at the inner edge just beyond the base. The basal sternite is produced to a point at the middle of the hind margin and bears a tuft of hairs at the apex.

Length, 3.5-4 mm. ; *breadth*, 2-2.5 mm.

UNITED PROVINCES : Kumaon, West Almora Division (*H. G. Champion*, May.).

Type in the British Museum.

This and an apparently similar insect from Cambodia, to which M. Pic has given the name *Danaë atronotata* (Mél. Exot.-Entom. xxxv, 1922, p. 9), are the only known species of the genus in which the surface of the body is not uniformly pale in colour. Its exceptional coloration may perhaps have some mimetic significance, for there is a rather deceptive resemblance between this insect and the wide-ranging *Stenotarsus bicolor*, Gerst., which in all probability occurs in the same localities. That species has almost the same colouring, although I have not seen any example with a black thoracic patch. It is also a little smaller and rounder in outline. *D. atronotata* is said to have the elytra "late et abbreviate nigro-vittatis." All but a narrow margin of each is black in *D. ornata*.

Genus SAULA.

Saula, Gerst., Mon. Endom. 1858, p. 223; Chap., Gen. Col. xii, 1876, p. 113; Arrow, Trans. Ent. Soc. Lond. 1922 (1923), p. 493.

TYPE, *Saula nigripes*, Gerst.

RANGE. India, Ceylon, the Malayan Region and Japan.

Elongate, rather loosely articulated, with long and slender legs and antennæ, and entirely clothed with a very fine recumbent pale pubescence. Head free, not sunk in the thorax, with prominent coarsely-faceted eyes. Pronotum short, transverse, with the lateral margins very narrow, the front angles blunt and not or scarcely produced, the hind angles acute, the base nearly straight, with a sharply-incised basal stria parallel to the margin and the lateral foveæ minute. Scutellum shortly triangular. Elytra long, much broader at the base than the prothorax, but without projecting shoulders, with curvilinear sides and separately rounded apices. Front and middle coxæ not widely separated, the prosternum produced behind into a narrow blunt process, the mesosternum forming an elongate rectangular plate. Trochanters long, completely separating the coxæ and femora. Femora and tibiæ slender, the 2nd joint of the tarsus broadly lobed. Antennæ very slender, all the joints generally more or less elongate, the 3rd a little longer than the 4th, the 9th, 10th and 11th larger than the rest and very loosely connected. Clypeus rather broad, straight in front. Labrum broad and rounded at the sides. Mandibles short and stout, not flat, bluntly bifid at the tip, the internal membrane extending to the extremity. Inner lobe of the maxilla much shorter than the outer, which is broader than it is long and much dilated at the end; maxillary palpi moderately long and slender. Mentum angularly dilated on each side; ligula moderately long, not chitinous, feebly bilobed, with rounded lobes of transparent membrane at the sides, the palpi placed wide apart and rather slender, the terminal joint elongate but not pointed.

The males of most of the known species, chiefly inhabitants of

the Malayan Region, exhibit peculiar modifications of the tibiæ and antennæ, but these are not found in the two Indian species.

Key to the Species of SAULA.

Legs black	<i>nigripes</i> , Gerst.
Legs pale	<i>ferruginea</i> , Gerst.

346. *Saula nigripes*.

Saula nigripes, Gerst., Mon. Endom. 1858, p. 224, pl. iii, fig. 2.

Bright orange-yellow, with the eyes, the antennæ, except the two basal joints, and the legs, except the basal part of the femora and the tarsi, black.

Rather shining above, with a very fine clothing of pale silky hair. The pronotum is not very broad, distinctly less than twice as broad as it is long, with the front margin nearly straight, the front angles blunt, with slightly thickened margins, and not at all produced, the lateral margins nearly straight and parallel, except at the hind angles, which are a little produced outwards and sharply acuminate. The elytra are very convex. The antennæ are very slender, all the joints more or less elongate, the 3rd a little longer than the 4th, the club very loosely articulated, the last joint nearly as long as the two preceding together and obliquely truncate at the end.

The tibiæ are simple and straight in both sexes.

♂. The antennæ are distinctly longer than those of the female.

Length, 4 mm.; breadth, 2 mm.

CEYLON: Dikoya, 3800–4200 ft. (*G. Lewis*, Dec., Jan.); Kandy (*G. E. Bryant*, June).

Type in the Berlin Museum.

347. *Saula ferruginea*.

Saula ferruginea, Gerst.* Mon. Endom. 1858, p. 225.

Saula occidentalis, Arrow, Trans. Ent. Soc. Lond. 1922 (1923), p. 493 (new syn.).

Straw-coloured, with the antennæ (except the basal part) dark and the extremities of the femora and bases of the tibiæ light brown.

The body is rather broad and not very convex, with a fairly close clothing of pale hair. The eyes are separated by twice their radius and relatively small. The pronotum is nearly twice as wide as it is long and quite as wide in front as at the base; the front angles are a little produced as rounded lobes and have broad elevated margins, which become very narrow at the sides; the lateral margins are gently bisinuate and the hind angles acute. The elytra are not very convex, broad at the base and not much dilated beyond it. The legs are long and slender and the tibiæ

straight and simple in both sexes. The antennæ are slender but not very long, the 3rd joint is distinctly longer than the 2nd or 4th, and the terminal joint is nearly as long as the two preceding ones together.

The male has the antennæ a little more slender than those of the female, and the last (5th) ventral segment is slightly pointed behind.

The female has the last ventral segment broader and not pointed.

Length, 4 mm. ; *breadth*, 2.5 mm.

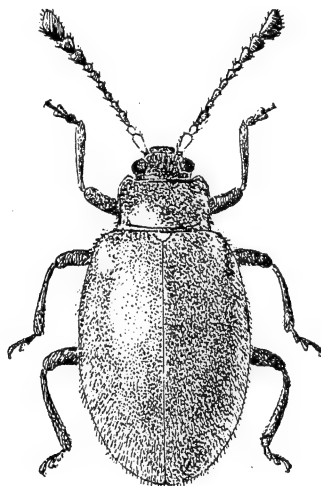


Fig. 73.—*Saula ferruginea*.

BOMBAY: Bandra (*Dr. A. S. G. Jayakar*). MALABAR: Shoranur (*T. V. Ramakrishna*, Aug.). ASSAM: Patkai Hills (*W. Doherty*). CEYLON: Puttalam (*F. P. Jepson*, Feb.). SUMATRA (*J. B. Corporaal*).

Type in the Berlin Museum; that of *S. occidentalis* in the British Museum.

I am indebted to Dr. Kuntzen for kindly sending me the type for comparison.

This species was found upon dry leaves of Palmyra palm (*Borassus*) at Shoranur and upon diseased Coconut leaves at Puttalam. It has a remarkably wide range.

Subfamily MYCETÆINÆ.

Mycetæinæ, Ganglbauer, Käfer von Mitteleuropa, iii, 1899, p. 918.

Endomychidæ adsciti, Gerst., Mon. Endom. 1858, p. 377.

Tarsi 3- or 4-jointed, long and slender, the 2nd joint not distinctly lobed and the penultimate one well developed; occasionally a vestige of a minute joint at the base of the terminal one may be traced, representing a 5th joint (*i. e.* the 4th, and not the 3rd, from the base). The antennæ have 10 or 11 joints.

The minute species of which this group consists were believed by Gerstaecker to be primitive in structure, the forms known to him having tarsi composed of four well-developed joints, the third of which he not unnaturally supposed to represent the minute penultimate joint of the typical ENDOMYCHIDÆ. The fuller knowledge now available shows that it is by the fusion of the first two joints that reduction to the quasi-3-jointed tarsus of the ENDOMYCHIDÆ has been brought about, and the minute penultimate is really the primitive 4th joint, traces of all the original five being occasionally discoverable.

Key to the Genera of MYCETÆINÆ.

- | | |
|--|--------------------------|
| Antennæ 10-jointed; elytra with numerous
striae or none | EXYSMA, Gorb., p. 396. |
| Antennæ 11-jointed; each elytron with a
single curved stria | ASYMBIUS, Gorb., p. 398. |

Genus EXYSMA.

Exysma, Gorb., Biol. Centr.-Amer., Col. vii, 1891, p. 145; Arrow, Trans. Ent. Soc. Lond. 1920, p. 77.

TYPE, *Exysma lævigata*, Gorb. (Central America).

Range. Tropical America, Japan, India, Australia.

Minute, hemispherical or broadly oval, very convex, clothed with coarse hairs or setæ. Antennæ 10-jointed, the two basal joints stout, the 2nd half the length of the 1st, the five succeeding minute, the 3rd elongate, 4th a little shorter, 5th to 7th very short, and the last three large and loosely-jointed, forming a massive club. Eyes far apart, small and prominent, moderately coarsely faceted. Pronotum strongly transverse, convex, without stridulatory membrane, lateral margins narrowly raised, with a lateral oblique carina on each side from the front to the hind margin, forming the outer wall of the triangular basal fovea. Scutellum broadly triangular. Elytra with wide epipleuræ and either numerous striae or none. Prosternum forming a narrow process behind the front coxæ. Mesosternum moderately long. Metasternum not much longer than the mesosternum, with a deep curvilinear stria at the front and side margins; metathoracic episterna

broad. Hind coxæ not very widely separated. Legs slender, but not very long; femora rather swollen beyond the middle; tibiæ very narrow; tarsi long, slender and filiform, composed of three simple joints.

Key to the Species of EXYSMA.

Pronotum lobed behind; elytra irregularly punctured	<i>ceylonica</i> , sp. n.
Pronotum not lobed behind; elytra with regular rows of punctures.....	<i>indica</i> , sp. n.

348. *Exysma ceylonica*, sp. nov.

Reddish, with the legs and the footstalk of the antenna pale yellow, and clothed with rather long and close erect yellow setæ.

Very broadly oval and highly convex, with rather short antennæ and legs. The eyes are a little less prominent and far apart than in *E. indica*. The pronotum is short, with the lateral margins strongly rounded, the borders elevated, flat, not very wide, abbreviated behind, all the angles very blunt, the hind angles rounded, the base trilobed, with a fine marginal stria, ending on each side in the broad triangular fovea, the outer wall of which is produced forward in a curve to near the front margin. The elytra are irregularly and rather closely and strongly punctured, each with a single fine juxta-sutural stria and conspicuous reflexed external margin. Antennæ short, with the basal joint long and thick, the 2nd a little longer than it is wide, the 3rd elongate, the 4th to 8th very short, gradually increasing in breadth, and the last three very large, rather loosely united, successively increasing in size and together equal in length to the preceding six.

Length, 1.5 mm.; *breadth*, 1 mm.

CEYLON: Dikoya, 3800-4200 ft. (*G. Lewis*, Dec. or Jan.).

Type in the British Museum. The type is unique.

349. *Exysma indica*, sp. nov.

Reddish-tawny, with the legs paler. Broadly oval, strongly convex, shining, with a clothing of long erect yellow setæ. The eyes are small and far apart. The pronotum is about two and a half times as wide as it is long, with the lateral margins strongly and uniformly rounded, the borders broad, flat but not elevated, the front angles slightly prominent, the hind angles obtuse, the base broad and nearly straight, with a deep marginal groove ending on each side in a punctiform orifice in the deep triangular fovea, the outer wall of which is produced forward in a curve to near the front margin, and meeting the inner wall at a sharp angle. Elytra bearing large separate punctures in regular rows, the juxta-sutural row united by a deep stria. Prosternal process rather long. Metasternum not long, with a deep marginal stria. Antennæ rather stout, the basal joint large and clavate, 2nd large,

oval, 3rd to 7th small and compact, 3rd elongate and the others short, the three terminal joints large, loosely jointed, equal in length to the preceding six, 8 and 9 transverse and 10 shortly ovate.

Length, 2 mm.; *breadth*, 1.5 mm.

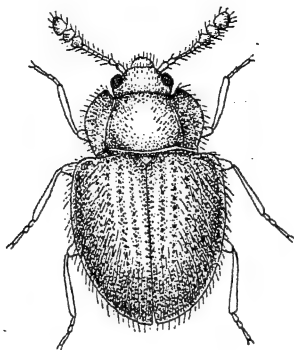


Fig. 74.--*Exysma indica*.

UNITED PROVINCES: Kumaon, West Almora (*H. G. Champion*, March).

Type in the British Museum.

Two specimens were taken under bark.

E. indica is closely similar to *E. niponensis*, Gorh., from Japan, but is decidedly larger and less rounded in outline, with the thoracic carinæ less sharply elevated and the depressed space between them and the lateral foveæ narrower.

Genus **ASYMBIUS**.

Asymbius, Gorh., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 299.

TYPE, *Asymbius crinipes*, Gorh.

Range. India and Burma.

Minute, compact and broadly rounded, entirely but thinly clothed with setæ, which are erect on the upper surface. Legs very slender, trochanters long, femora slender at the base and a little thickened in the middle, tibiæ and tarsi long and filiform, the front tarsus rather shorter than the others and composed of three joints, the middle tarsus 3-jointed, with the basal joint long and incompletely divided, the hind tarsus composed of four elongate joints, the first three nearly equal, the last a little longer, the hind tarsus a little longer than the others. Antennæ 11 jointed, very long and slender, the 1st joint elongate and bent, the 2nd moderately large and elongate, 3 to 8 minute, nearly equal, 9 to 11 nearly as long as the others combined, very loosely articulated, not flattened, subequal, the last very feebly

thickened. Eyes small, prominent, rather finely faceted. Outer lobe of the maxilla short, broadly rounded at the end; terminal joint of the palpus long and pointed. Ligula short, transverse, gently emarginate in front; terminal joint of the labial palpus securiform, as broad as long. Pronotum broad, finely margined at the sides and base, with punctiform foveæ and without stridulatory membrane. Elytra each with a deeply-incised stria adjoining the suture, which it touches at the apical angle, very gently diverging from it anteriorly, curving towards the base in the scutellar region and nearly reaching it about the middle. Prosternum not broad, produced and truncate behind the front coxæ. Mesosternum nearly quadrate between the middle coxæ. Metasternum very tumid in the middle. Abdomen with five exposed ventral segments, the 1st as long as the three succeeding, the 5th short.

In the male a minute production of the apical angles of the elytra occurs, the exact form varying according to the species.

Key to the Species of ASYMBIUS.

- 1 (2) Sides of the prothorax dilated in front. *crinipes*, Gorh., p. 399.
- 2 (1) Sides of the prothorax not dilated in front.
- 3 (4) Pale yellow; antennal club black, longer than the footstalk. *claviger*, sp. n., p. 400.
- 4 (3) Red; antennal club not black and not longer than the footstalk. *rufus*, sp. n., p. 401.

350. *Asymbius crinipes*.

Asymbius crinipes, Gorh.,* Ann. Mus. Civ. Genova, xxxvi, 1896, p. 299.

Very pale straw-yellow, with the extreme margins of the pronotum and elytra, a vague median area upon the former, the club of the antenna and the lower surface brown.

It is very short and broad, highly convex and very smooth and shining, with long erect white setæ rather sparingly scattered over the whole surface. The upper surface is scarcely perceptibly punctured. The pronotum is more than twice as wide as its length in the middle, with its sides narrowly margined, strongly rounded in front, nearly straight and slightly convergent behind, the outer edge interrupted a little before the middle by a vertically flattened oval dilatation; the front angles are scarcely produced and nearly rectangular, the hind angles very slightly produced and rather sharp, the base gently trisinate and finely margined and the foveæ punctiform. The scutellum is triangular and moderately large. The elytra are short, convex and hemispherical, with the shoulders tumid but not prominent, the outer margins regularly rounded and a little flattened in front. The lower surface is very scantily clothed with minute pale setæ and very smooth and shining. The 1st joint of the antenna is long,

joints 2 to 8 are together shorter than 9 to 11, the 2nd elongate, 3rd to 8th minute and subequal, 9 to 11 very long and loosely articulated and of equal length.

♂. The apical angle of each elytron is strongly produced, forming a laterally-compressed lobe which, seen from above, has the appearance of a sharp spine.

Length, 1.5 mm.; *breadth*, 1 mm.

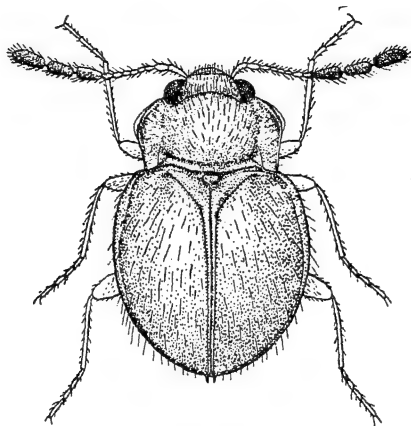


Fig. 75.—*Asymbius crinipes*, male.

BURMA: Karen Hills, Cheba, 2700–3300 ft. (*L. Foa*, April, May, Dec.); Asciuii Ghecu (*L. Foa*, March, April); Bhamo (*L. Foa*, Aug.).

Type in the Genoa Museum; co-types in M. René Oberthür's collection.

351. *Asymbius claviger*, sp. nov.

Pale yellow, with the club of the antenna black.

Broadly oval, highly convex, very smooth and shining, sparingly clothed with pale erect setæ, the antennæ and legs very long and slender. The pronotum is more than twice as wide as it is long, with its sides narrowly margined, strongly and uniformly rounded, all the angles blunt, the front ones a little produced, the base gently trisinate and deeply sulcate, the foveæ strong and deep. The elytra are subhemispherical, with the margins a little flattened in front, the shoulders rounded and not tumid. The antennæ are very long, joints 1 and 2 rather long and slender, 3 to 8 short but distinctly and progressively increasing in size, the last three long, cylindrical and subequal, forming a loosely-jointed club longer than the eight preceding joints together.

♂. The apical angle of the elytron is slightly produced.

Length, 1.75 mm.; *breadth*, 1 mm.

TENASSERIM: Tavoy (*W. Doherty*).

Type in the British Museum. There are two specimens.

352. *Asymbius rufus*, sp. nov.

Chestnut-red, with the legs and the footstalk of the antenna a little paler.

Oval, highly convex, very smooth and shining, the whole surface clothed, not very closely, with pale erect hair and the upper surface scarcely perceptibly punctured. The pronotum is more than twice as wide as it is long, with its sides strongly but narrowly margined, uniformly rounded and slightly convergent behind, the front angles rectangular, the hind angles sharp but not produced, the base bisinuate and deeply sulcate and the foveæ large and deep. The elytra are oval, not broad at the shoulders, which are only slightly tumid, with the outer margins regularly rounded and a little flattened in front. The antennæ are long, joint 1 clavate, 2 elongate, 3 to 8 small, subequal but slightly increasing in breadth, 9 to 11 cylindrical, subequal and together forming a slender loosely-jointed club, about as long as the eight preceding joints.

♂. The apical angle of the elytron is acutely produced.

♀. The apical angle of the elytron is blunt.

Length, 1.75 mm.; *breadth*, 1 mm.

SIKKIM: Darjeeling, Gopaldhara, 4720 ft. (*H. Stevens*, Aug.); Darjeeling, 7000 ft. (*C. Parva*, Aug.).

Type in the British Museum; co-types in the Calcutta Museum.

Subfamily TROCHOIDEINÆ.

This group consists of a very small number of species of extremely peculiar aspect, entirely at variance with that of the rest of the ENDOMYCHIDÆ. The slender 4-jointed tarsi, and still more the extraordinary antenna composed of only four or five joints, seem at first sight to preclude them of necessity from the present family. The antenna with its massive solid club produces a striking similarity to species of the family PAUSSIDÆ, to which the type-species (only known from a specimen preserved in amber) was originally referred; and, under the name of *Pseudopaussus*, the common *Trochoideus desjardinsi* has actually in recent years again been referred to the PAUSSIDÆ. But the resemblance is a purely superficial one and a careful study of the whole structure of *Trochoideus* shows unmistakably that it is in reality only a curiously modified member of the ENDOMYCHIDÆ. The organs of the mouth, indeed, hardly differ from those of *Eumorphus* and other typical genera of the family.

The remarkable external modifications of structure are correlated with habits very different from those of the bulk of the family.

Genus **TROCHOIDEUS.**

Trochoideus, Westw., Trans. Linn. Soc. Lond. xvi, 1833, p. 673; id., Trans. Ent. Soc. Lond. ii, 1838, p. 95; Gerst., Mon. Endom. 1858, p. 381; Chap., Gen. Col. xii, 1876, p. 147.

Pseudopaussus, Schulze, Phil. Journ. Sci. xi, 1916, p. 292.

TYPE, *Paussus cruciatus*, Dalm. (found in amber *).

Range. Throughout the Eastern Tropics.

Rather narrowly elongate, clothed with short close-lying pubescence. Antennæ very short and massive, composed of four or five joints, the 1st short and stout, 2nd and 3rd very short and the 4th very large and elongate, the extremity formed by an immovable and partially fused 5th joint. Eyes small, prominent and far apart. There is no stridulatory apparatus. Mandible acutely produced at the apex, with a minute inner tooth at a little distance from it. Maxilla with a thin membranous, moderately broad, outer lobe and slender inner lobe; the palpus stout, with the terminal joint elongate and pointed. Mentum triangular; ligula short, with slender, strongly divergent lateral lobes; the labial palpi close together, with the terminal joint cupuliform and very large. Prothorax transverse, narrowly margined at the sides and base, without basal foveæ. Front coxæ contiguous, the prosternum very short. Middle coxæ very narrowly separated by processes of meso- and meta-sterna. Hind coxæ widely separated. Abdomen composed of six visible ventral segments, the first as long as the three succeeding. Femora slender at the base, thickened in the middle. Tibiæ moderately slender. Tarsi filiform, 4-jointed, the 1st joint slender, the 2nd and 3rd short, almost equal, not at all flattened and scarcely lobed, the 4th long. Elytra elongate, with slightly prominent shoulders and separately rounded apices, which scarcely cover the tip of the abdomen.

♂. The 3rd and 4th joints of the antenna are very closely united, the 3rd extremely short and broad and the 4th greatly swollen. The hind tibiæ are sinuous.

Two species are recorded from British India, but as I have seen no examples of the second, *T. fecæ*, no key is here given.

353. *Trochoideus desjardinsi*.

Trochoideus desjardinsi, Guér., Rev. Zool. 1838, p. 22; Gerst., Mon. Endom. 1858, p. 385.

Pseudopaussus monstrosus, Schulze, Philipp. Journ. Sci. xi, 1916, p. 292; Arrow, Trans. Ent. Soc. Lond. 1920, p. 77.

Trochoideus rouyeri, Pic, Mém. Exot.-Entom. xxxv, 1922, p. 8.

Trochoideus particularis, Pic, l. c.; Arrow, Trans. Ent. Soc. Lond. 1922 (1923), p. 485.

Trochoideus amphora, Cantor, Journ. Proc. Ent. Soc. Lond. 1844, p. 118.

* Efforts to discover exactly in what part of the world this insect was found have been in vain.

Trochoideus termitophilus, Roepke, Treubia, i, 1919, p. 34 (new syn.).

Fawn-colour, with the legs, antennæ and lower surface yellowish and closely clothed above and beneath with short grey pubescence.

Elongate and scarcely convex. Head short and broad, scarcely visibly punctured. Pronotum more than twice as broad as it is long, rather closely and evenly punctured, with the front and hind margins nearly straight, the sides strongly rounded in front, contracted, convergent and nearly straight behind, the front angles obsolete and the hind angles rectangular and sharp. The scutellum is strongly transverse. The elytra are rather closely and evenly punctured and each has a fine juxta-sutural stria; they are a little broader at the shoulders than the base of the pronotum and

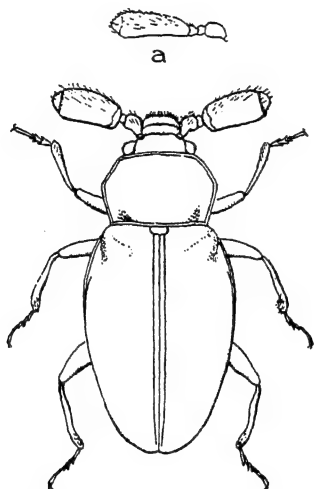


Fig. 76.—*Trochoideus desjardinsi*, male; a, antenna of female.

gently dilate behind the shoulders but gradually diminish in width from before the middle to the extremities, which are separately rounded, exposing the extreme tip of the abdomen. The metasternum is rather strongly punctured and has a median longitudinal sulcus, and the abdomen is finely punctured beneath.

♂. The club of the antenna is about as long as the width of the head across the eyes and about half as much in diameter. It is longitudinally divided anteriorly and posteriorly by an impressed line and has near the extremity a transverse suture partially effaced beneath.

♀. The club of the antenna is about as long as in the male, but its diameter is only about a quarter of its length.

Length, 3–4 mm.; breadth, 1.5–2 mm.

CEYLON: Peradeniya (*E. E. Green*, July). S. INDIA: Quilon, Travancore Coast (*N. Annandale*, Nov.). BURMA: Kawkaireik, Amherst District (*F. H. Gravely*, Nov.). ANDAMAN ISLANDS: Port Blair (*S. Kemp*, Feb., March). SIAM. MALAY PENINSULA. JAVA. BORNEO. PHILIPPINE ISLANDS. BATCHIAN. COCOS KEELING ISLANDS. SAMOA. FIJI. SEYCHELLES ISLANDS. RODRIGUEZ ISLAND. MAURITIUS. MADAGASCAR.

Dr. Hugh Scott found this remarkable insect in the Seychelles in heaps of refuse coconut husks, and its oceanic distribution seems to suggest that it is associated with the Coconut Palm wherever that tree occurs. It was taken by Roepke in the nests of a Termite (*Termes gilvus*) in Java and is stated by Wasmann (*Krit. Verz. Myrm. Term. Arthr.*, 1894, p. 132) to have been found in Ke Island with an Ant (*Plagiolepis longipes*). A detailed account of the beetle in the Dutch language is given by Roepke in the paper referred to above and the interesting suggestion is made that a very extraordinary larva found by Escherich in Ceylon with the Termite *Eutermes ceylonicus* may be the larva of *Trochoideus*. This strange creature is described and figured in Escherich's 'Termitenleben auf Ceylon' (1911, p. 131, figs. 53 & 62) and is called by Prof. Silvestri *Larva eutermiana*. It has so close a resemblance, both in its appearance and movements, to the Termites in whose company it lives that only a very close inspection revealed its true nature. If Roepke's suggestion is correct, as I am inclined to think probable, this larva is no doubt that of the present species, *Trochoideus desjardinsi*.

354. *Trochoideus feæ*.

Trochoideus feæ, Gorb., Ann. Mus. Civ. Genova, xxxvi, 1896, p. 301.

"Pitchy-black, with the prothorax subquadrate, scarcely heart-shaped, deeply grooved on the disc, almost smooth, the sides sinuated, elytra half as broad again as the prothorax, with an impressed sutural stria, the antennæ of the male five-jointed, the club appearing as though composed of three joints united.

"Length, 6 mm. (male and female).

"BURMA: Carin Ghecu (1300-1400 metres).

"This remarkable species is much larger and broader than *T. desjardinsi* and has also the antennæ rather differently formed: in the male the basal joint is stout and pear-shaped, the second short and bead-shaped, the third joint is obconic and closely applied to the base of the trapezoidal fourth joint, forming the base of the clava, while the fifth seems enclosed in the apex of the fourth and is perhaps not a real articulation (and the corresponding joint in *T. desjardinsi* does not seem to have been so regarded by Gerstaecker).

"In the female the two basal joints are as in the male, the third joint is elongate, then a bead-shaped fourth joint, followed by a compressed clavate fifth joint which has its apex compressed still further. This tip is red in both sexes. The thorax is widest at

little below the anterior angles, and is there wider than the length, at the base the width is equal to the length, the central channel is deep and continuous from the front to the base, the basal sulci are evident. The elytra are broad, with a short carina from the callus and a sutural stria, the sculpture of the whole upper surface is very close and nearly smooth, the elytra are sub-opaque and the pubescence is short and scarcely perceptible except under a good lens. Two examples, a male and a female, are before me, agreeing very closely, except in the structure of their antennæ."

I do not know this species and have not been able to trace the specimens described, which Dr. Gestro has not found in the Genoa Museum and which were not in the Gorham collection when acquired by M. René Oberthür.

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